1998 Annual Report

December 15, 1998

Dear Governor Wilson and Members of the Legislature:

Pursuant to Senate Bill 1 (Chapter 508, Statutes of 1995), I am pleased to deliver the *1998 Department of Information Technology Annual Report*.

I am proud to have been at the helm of the Department of Information Technology during the formative 36 months of this department's existence. As veterans of state service can attest, it is never easy for a brand-new control agency to establish itself as an authority on any subject – let alone a subject as embattled as information technology (IT) has been during the past decade. Despite the expected hesitancy of established agencies to embrace new policy direction on information technology procedures and practices, the DOIT has managed to forge brave new paths on public sector IT reforms, which in turn, have established California as a national leader in this area.

In this time, the DOIT reached a legacy milestone on a number of reforms first identified in September 1994 by the Governor's *Task Force on Government Technology Policy and Procurement* report. Many reforms recommended by this task force have been instituted, and in the spirit of that bellwether document, best practices of the private sector are now regularly applied when new projects are being planned, procured, managed and implemented.

In October 1997, Governor Wilson was the first Governor in the country to sign an Executive Order addressing the Year 2000 problem. This Executive Order formally placed the DOIT in the leadership role as Year 2000 coordinator, while mandating that responsibility for successfully achieving conversion falls on agencies and departments, that is, the executive sponsors so critical to project success.

The diligent staff of the DOIT's Year 2000 Project Office have produced numerous project guides, white papers, and other significant documents to guide state agencies and departments on proven ways to assess, correct and properly test legacy, desktop and embedded applications of information technology in state government. Many states, and several sovereign nations have requested permission to use these same documents to reconcile their own Year 2000 issues.

In closing, I want to thank Governor Wilson and the members of the Legislature for their commitment to excellence in IT policy and procurement in California State Government. The staff at the DOIT have worked extremely hard to fulfill the expectations of the Executive branch and the Legislature. In my opinion, these last several years have been the finest example of a "can do" spirit on the part of the state's IT workforce.

Sincerely,

John Thomas Flynn
Chief Information Officer
State of California

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1 Executive Summary

On the eve of a new millenium, the Department of Information Technology has assembled a strategic action plan to address both the challenges of the Year 2000 date transition as well as to prepare the State of California for a new era of information technology planning, procurement and implementation.

The *1998 Department of Information Technology Annual Report* addresses significant information technology issues. They include Year 2000 remediation, electronic commerce, project oversight, data center consolidation and reducing project risk, among others.

Complex tasks are performed by computers throughout state government.

Most importantly, the *1998 Annual Report* fleshes out the blueprint for information technology planning and development for California state government first mentioned in the *1997 Annual Report*. It provides recommendations and discusses challenges for the Governor-elect and the Legislature.

Like the *1997 DOIT Annual Report*, this report reflects the latest accomplishments. While the *1998 Annual Report* is comprehensive, it is not exhaustive. For further information on specific initiatives, policy actions and accomplishments, readers are advised to review the DOIT website www.doit.ca.gov.

Addressing the Year 2000 Challenge

Despite a number of accomplishments, the final 12 months before the arrival of the Year 2000 will be a considerable challenge for the DOIT's California 2000 Project Office as it continues to provide guidance to more than 150 individual California agencies, boards and departments charged with remediating this problem. In the face of these ongoing challenges, the previous 12 months have chronicled a number of successes, as well as the forging of new partnerships.

The Year 2000 represents a threat to computer systems throughout the world. The problem arises because most computer programs and microchips created during the last 30 years are programmed with the assumption that all dates fall within the 20th century. Unless corrective action is taken, business functions and governmental agencies that depend on correct understanding and manipulation of dates will begin to fail as the turn of the century approaches.

For example, without timely remediation, tax revenue agencies may be unable to promptly process tax returns, health and welfare agencies could lose their ability to provide state aid to needy recipients and automated systems may fail in facilities such as prisons.

Much work remains to be accomplished – not just by the California 2000 Project Office, but by all IT officials at all levels of state government. This commitment by the state has extended to the local level of city and county government through the formation of the *Intergovernmental Task Force on Year 2000,* recently renamed *the California Association of State and Local Chief Information Officers (CALCIO).* To meet this fundamental challenge to the state's large databases and systems, both state and local government have agreed to jointly strategize on the best ways remediate the Year 2000 issue when it comes to the dizzying array of interfaces that exist between all levels of government. All agree, this is the largest, most comprehensive IT project in the state's history.

The DOIT has worked toward enhancing awareness at all levels of state government through presentations to the Governor's Office, the Governor's Cabinet, the Legislature and the staff and directors of all state agencies and departments, as well as to many local government and non-government bodies.

On a parallel track, the California 2000 Project Office has collected information on existing California State Government computer applications throughout the Executive Branch. The office has distilled this information for potential impact and determined that more than 1,200 computer systems – 600 of them mission critical – require some form of remediation to become Year 2000 compliant. The estimated cost to fix these problems now approximates $250 million. In turn, the DOIT has provided snapshots of the state's ongoing progress – on a quarterly basis for the Administration, Legislature and the public in general. This report is available on the state's Year 2000 website: www.year2000.ca.gov.

Reducing Project Risk

The challenges associated with implementing state information technology projects remain very real. In fact, risk will always be high for complex projects. Moreover, this risk is inherent in information technology projects, and is by no means unique in California state government.

The risk of information technology project failure is a reality in all sectors – public and private. Therefore, some failure can be anticipated.

The goal of the DOIT's oversight effort is to minimize the potential for failure through a combination of methods so that over time California achieves an increasingly higher ratio of project success for its multi-billion dollar investment. Accordingly, the DOIT has focused on the following primary instruments for mitigating IT project risks:

- Project initiation and approval program;
- Project oversight program;
- Independent project oversight;
- Risk Assessment Model (RAM); and
- Oversight Contracts.

In addition, the DOIT is aggressively pursing additional methods to further improve IT project risk mitigation such as:

- Improving the state's model contract for IT projects;
- Sponsoring risk management training and workshops for state projects; and
- Comissioning a survey to determine how the RAM can be improved.

During 1998, The Department of Information Technology further emphasized this risk management approach in management memo 98-02, entitled, *Fundamental Decision Criteria for Approval of IT Projects.* This memo requires that risk assessment be used to better aid the correct application of risk management to ensure project success.

Information Technology Procurement Policy Reform

Procurement and implementation of IT projects entail many challenges for the state different from those faced in acquiring traditional goods or services. Unless these challenges are addressed, projects face the risk of missed deadlines, cost overruns, substandard products or even project failure. Over the past two years, the DOIT has worked in conjunction with the DGS to significantly reform the State's IT procurement policies in the areas of contract language and acquisition of major IT projects.

In the area of contract language, the DOIT worked in conjunction with the DGS to ensure that agencies' and departments' contracts for IT projects contain language which promotes successful project completion with appropriate legal protection. In October 1997, the DOIT issued a Management Memo jointly with the DGS (MM 97-14) establishing contract guidelines for all major IT projects and requiring the use of specific contractual clauses.

The Pursuit of Excellence: Investing in State Projects and Managers

Project management in California government can represent a major category of risk, or serve as a valued asset. This dichotomy is a direct result of the decentralized approach state government has taken with respect to information technology projects. The DOIT has determined that in some cases the competition for experienced project managers continues to be a significant barrier toward the implementation of successful state projects. Some departments are better able to compete for managers for their information technology projects. However, even the most experienced department may find a shortage of experienced project managers for a particularly challenging project.

The DOIT has addressed this issue in two ways to set a benchmark for project management expertise. First, the DOIT has established an official program to train and certify project managers in cooperation with the University of California at Davis. This is the first executive government/higher education partnership in the nation to certify state

managers for IT project management. Second, the DOIT participated in a pilot project with the Institute of Electrical and Electronics Engineers (IEEE) to train project managers to apply IEEE standards to state projects.

Thirdly, DOIT has co-sponsored, with the Department of Personnel Administration and the State Personnel Board, an effort to recruit and retain project managers to improve the delivery of technology services.

Because the University of California, Davis training program is new and the need for project managers whose qualifications meet the levels of risk and complexity of existing, ongoing projects is immediate, the DOIT has moved aggressively to ensure capable managers are available.

The DOIT has mandated as a condition of project approval that project managers be acquired from an external source if insufficient expertise exists within a department. In addition, this requirement may be imposed on currently-approved or ongoing projects in instances where complications and/or difficulties arise which can be directly attributed to poor or inadequate project management.

In the pilot project, the Institute of Electrical and Electronics Engineers (IEEE) provided training expertise in a unique partnership with the State of California, which was seeking world-class direction to improve its information technology (IT) application projects.

In an age where software projects are increasingly complex, experts in areas such as software project management become critical to the overall success of an IT project. The program, developed by IEEE, is being coordinated by the (DOIT) and is intended to ready state software development project managers for the 21st century. The DOIT partnership is intended to serve as a model for partnerships that the IEEE can forge with other states and jurisdictions.

Restructuring the State's Data Centers

Following delivery of the data center consolidation study entitled *Analysis, Conclusions, and Recommendations on the State of California's Department of Information Technology Data Center Consolidation Study,* work began in earnest for plans on eventual relocation of at least one data center – the Stephen P. Teale Data Center.

This was accomplished, in part, with the groundbreaking celebration August 25, 1998, in Rancho Cordova for the new Teale Data Center facility. Completion of the new 137,000 square foot facility is scheduled for July of 1999, with a phased move-in of its 365 employees and multiple data processing systems beginning a month later.

The consolidation study, prepared for the DOIT by the Deliotte & Touche Consulting Group, spelled out key findings and identified consolidation opportunities that could result in significant saving for the state.

The study recommends considering consolidation of the state's Teale and the Health and Welfare Data Center (HWDC) only after all Year 2000 operational recovery, preparation and testing, business function support, and technical disruption issues have been addressed. Consolidating Teale and HWDC could create significant savings over 10 years, according to the Deloitte & Touche study.

Even before any of its recommendations have been implemented, the Deloitte & Touche study is yielding benefits for the taxpayers. By thoroughly examining Teale's rates and operations, the study was able to identify areas in which the data center will be able to reduce the rates it charges to other state agencies – bringing down the overall cost of government.

The DOIT has drafted, and has enforced in new information technology projects, several of the policies recommended in the study, including the centralization of new systems, enhanced operational recovery provisions, and the consolidation of data center planning and technical efforts. Some of the proposed consolidation activities outlined in the report will be deferred until the next century to allow the completion of the state's Year 2000 compliance efforts in their current locations.

Privatizing the State's Telecommunication Networks

In December 1996, the DOIT partnered with the Department of General Services (DGS) Telecommunications Division to release a new strategic plan for the state's networks. This report, entitled *California Integrated Information Network: A Strategic Plan for CALNET and All State Telecommunications Networks*, made a series of findings regarding California Network (CALNET) and the state's other telecommunication networks, and outlined a strategy to address the problems with CALNET while establishing a process to achieve real network consolidation.

On July 21, 1998, the Department of General Services announced it had tentatively recommended the team of Pacific Bell and MCI to provide voice, data and other telecommunication services to state government, replacing the state-owned CALNET system. A formal "Intent to Award" was released in early August 1998. Following resolution of a protest, it was signed in December 1998. That contract, valued at $929 million, will give state offices access to the most advanced technology available, while saving taxpayers an estimated $117 million over the next ten years.

Enhancing Information Technology Security

As the State of California's increasing reliance on information technology grows, issues such as security of vital information become increasingly critical. In response, the DOIT has contracted with the federal Department of Energy's Lawrence Livermore National Laboratories Security Incident Technology Center (SITC). This center is a leading nationwide resource for assisting large data information users, such as the State of California, in responding to potential or actual attacks on large databases by hackers or others with mischievous or criminal intent.

The DOIT clearly understands the government's custodial responsibility for confidential and sensitive information about citizens, businesses and organizations. This precedent-setting alliance with Lawrence Livermore Laboratories, which has national implications, is one of several steps the DOIT is taking to ensure that the state's information technology systems are planned, constructed and maintained in a responsible manner to maintain public trust and confidence.

New Trends and Technologies: The DOIT's Vision for California's Future

DOIT and California State government are preparing to support a major increase in the use of electronic commerce (EC). A few State agencies are already using digital certificates to ensure secure transactions, but the Year 2000 (Y2K) effort has greatly slowed the implementation of EC. Once departments have their environments prepared for Y2K, the DOIT anticipates that they will move immediately to develop EC enabled applications.

To prepare for this increased interest and anticipated workload, DOIT is working with Federal agencies, other state governments, the private sector, and state government advisory committees. These groups are working together to learn the readiness of EC technology and provide business models for organizations to follow. There have also been efforts to create policy guidelines for general use.

To take full advantage of the efforts of these groups, the Department of Information Technology (DOIT) has created a strategic plan for electronic commerce. This is the first step in developing the policies for the State. The Information Technology Coordinating Council's Electronic Commerce Task Force will finalize this strategic plan and aid in the development of the State policies.

Providing Access to Electronic Government

Few technologies offer as much potential benefit to government and citizens as those associated with the Internet and the World Wide Web. The easy use and low cost of these tools have led to their widespread adoption by businesses, organizations, governments and citizens. The Internet is becoming a universal computer network, used by nearly all businesses and a growing proportion of private citizens, and presenting a completely new means for government to deliver its services and perform its functions.

The DOIT is facilitating the use of these tools. For example, the development, during 1998, of a California Electronic Government page. The DOIT believed it was important to provide a way to showcase the emerging online services offered through the individual Web sites of California's government. To become a leader in Internet government services, this Web site set forth the following goals:

- Raise the public's awareness of government online services;
- Provide an interface that is easy to use;
- Make the site easy to find;
- Create an extensible design; and
- Create an attractive, contemporary graphic and interface design.

California state government has kept pace with the development of the internet, with nearly all state agencies offering web pages. Most of the web pages provide substantial information on the functions of their sponsoring agencies and provide means of contacting the agencies for assistance or services. By July 1998, all web pages were required by statute to include a complaint form that can either be completed and submitted online or printed and mailed conventionally. The California State Library has sponsored a particularly high-quality page which serves as an index and gateway to the individual Internet presentations of the other state agencies.

2 History

Three years ago, the Department of Information Technology (DOIT) was created pursuant to the provisions of Senate Bill 1 (Chapter 508, Statutes of 1995), which Governor Wilson signed into law in October of 1995. This new department was challenged to bring statewide coordination to California state government's information technology (IT) and telecommunications systems and to ensure that the state receives maximum benefit from its nearly $2 billion annual investment in these technologies.

Change is a constant with IT.

January 1, 1996, marked not only the beginning of the DOIT, but also the culmination of efforts by many to initiate a fundamental reform of the state's use and management of information technology. In 1994, Governor Wilson created the Task Force on Government Technology Policy and Procurement, which conducted an expedited, 60-day review of state information technology practices.

The task force's report provides a remarkably comprehensive blueprint for reform, considering the short time in which it had to perform its work. The members developed multiple recommendations in four major subject areas: planning and organization, management and accountability, procurement, and personnel. However, the task force itself acknowledged that its report was not intended to be a checklist of action items to be performed. The report stated that "once appointed, the CIO should have full latitude regarding how organizational and policy changes are implemented, although they would likely be based on the CIO's assessment and further investigation of issues." In addition, the task force acknowledged that its review was not comprehensive and that "there is more work to be done in studying the state's information technology policies and practices."

To build on the work of the task force, in July 1994 Governor Wilson assembled some of the brightest minds from California's world-class, private sector high technology industry into the Governor's Council on Information Technology. This group undertook an exhaustive study and issued recommendations urging state agencies to re-examine their core functions. The Council's report, entitled *Getting Results*, is a guiding document for the work being done at the DOIT.

Taken together, the reports of the task force and Governor's Council and Senate Bill 1 identify literally hundreds of discrete action items for the DOIT and form a standard by which its work can be measured.

Department Organization

The DOIT has been structured into four divisions and four offices which address the areas of responsibility assigned to the department.

Chief Information Officer

A consistent theme among *Getting Results,* the report of the Task Force on Government Technology Policy and Procurement, and Senate Bill 1 is the need for greater statewide coordination of information technology investment and applications. Specifically, SB 1 gives the DOIT responsibility for the "development of statewide vision, strategies, plans, policies, requirements, standards, and infrastructure."

A key component of this statewide coordination was the creation by Executive Order W-120-95, and subsequently by SB 1, of the position of Chief Information Officer (CIO) for the state, reporting directly to the Governor.

SB 1 grants the CIO specific authority to:

- Review proposed information technology projects for consistency with statewide strategies and suspend or disapprove initiation of a project according to that review;
- Make recommendations for remedial measures to be applied to agency information technology projects, including the use of independent oversight; and
- Develop policies and requirements needed to implement SB 1 in the State Administrative Manual (SAM) or by Management Memo.

Legislative and External Affairs Office

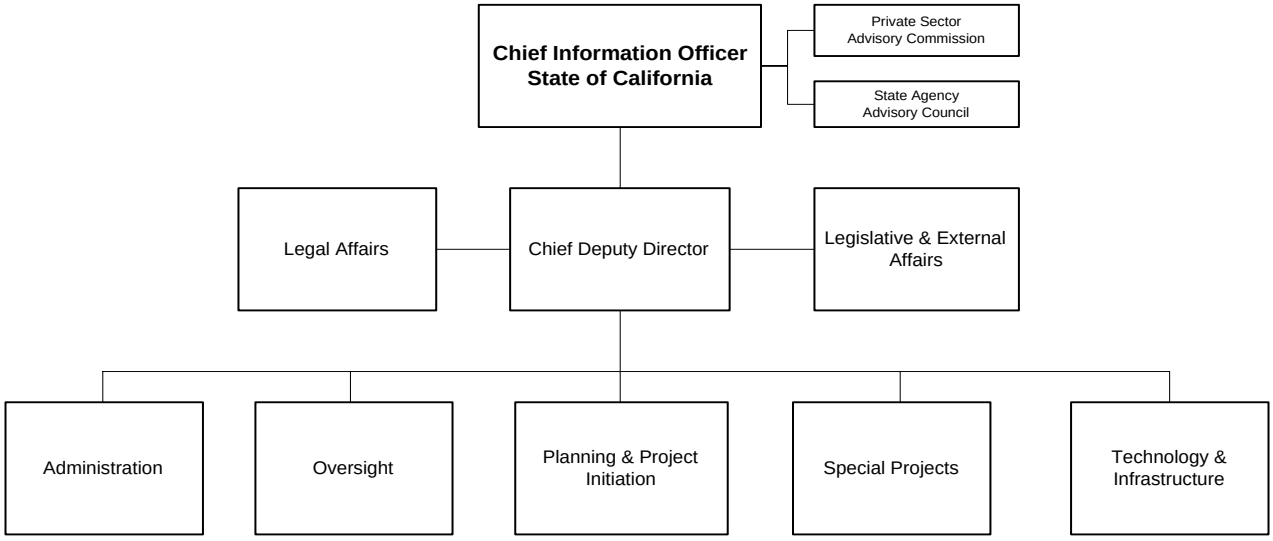
Information technology and telecommunications are issues of significant interest to the Legislature, media and the public. The Legislative and External Affairs Office accommodates requests for information and monitors IT related legislation. As needed, this office also serves as liaison to the DOIT advisory committees: the Information Technology Coordinating Council (ITCC) and the California Information Technology Commission (CITC).

Legal Affairs Office

Many IT and telecommunications issues, and certainly the Year 2000 issue, have significant legal ramifications. The rapid development of the information economy is forcing significant changes in major bodies of law that directly impact state government, including copyright, privacy and taxation. The state's telecommunications and IT projects are largely exercises in procurement, which in turn are fundamentally exercises in contract law. The legal counsel ensures that the state's interests are protected and the agencies' legal staff are provided with the most up-to-date information and resources to effectuate the required legal changes.

Planning and Project Initiation Division

The DOIT created the Planning and Project Initiation Division to assist state agencies and departments in creating IT strate-



1998 OrganizationChart for the Department of Information Technology

gies and plans that will meet their business needs, maximize the return on IT investment and mitigate project risks.

Specifically, the Planning and Project Initiation Division is responsible for:

- Assisting the CIO in developing California's statewide information technology strategic plan;
- Providing guidance and assistance to agencies and departments to ensure that their information technology plans are consistent with the statewide information technology strategic plan;
- Reviewing and making recommendations to the CIO regarding approval of Feasibility Study Reports (FSR), Special Project Reports (SPR) and various IT project-related documents.

Oversight Division

Government Code §11700 et. seq. charges the DOIT with responsibility for information technology project oversight. To carry out this responsibility, the DOIT has ensured placement of independent oversight teams on all major projects identified by the department as warranting close attention. Increasing the level of project oversight, both through the efforts of the Oversight Division and through the use of independent private sector experts, continues to be the top priority of the DOIT.

Specifically, the Oversight Division is responsible for:

- Providing project oversight on high-risk, large, complex projects;
- Developing statewide project oversight strategies, policies and processes to improve the state's overall management of information technology; and

- Developing and implementing appropriate policies, requirements and processes for risk assessment on information technology projects.

Technology and Infrastructure Division

Technology and infrastructure are the foundations which support information technology, enabling computers to be networked and information to be transported and shared. As such, SB 1 gives the DOIT responsibility and authority for state telecommunications policy. The critical nature of this responsibility warranted the creation of the post of Chief Networking Officer, the first position to be so specified by any state in the nation.

The Technology and Infrastructure Division managed by the Chief Networking Officer has been charged with development and integration of the state's telecommunications infrastructure to meet the needs of California government. This division provides guidance to all state agencies in their use of telecommunications technologies, security and disaster recovery. Major projects for this division include managing the data center and telecommunications network consolidation efforts, and setting state policies relating to messaging, internetworking, operational recovery, and information security.

Special Projects Division

SB 1 charges the DOIT with addressing information technology issues which have statewide implications, thereby avoiding situations where a lack of statewide coordination may result in disjointed, unstructured, incompatible and costly agency-by-agency solutions. The DOIT created the Special Projects Division to identify and address issues of statewide significance such as the Year 2000 challenge and successful implementation of information technology projects. To carry out its responsibilities, this division established two project offices: the CA 2000 Project Office and the IT Project Office.

CA 2000 Project Office

The DOIT's CA 2000 Project Office was created to establish a centralized focal point for statewide coordination of the Year 2000 (Y2K) challenge. The CA 2000 Project Office is administering the CA 2000 Program to ensure that the state's mission critical systems become Y2K compliant. It has been successful in planning, gathering, coordinating, sharing and reporting statewide efforts in meeting the Y2K challenge. The CA 2000 Project Office has the following responsibilities:

- Develop and maintain a database to facilitate information gathering, sharing and analysis of Y2K activities;
- Develop tools to assist and monitor entities in their Y2K implementation;
- Provide guidance and enable assistance in planning and managing Y2K activities;
- Promote information sharing to leverage inter-departmental resources and achieve economies of scale;
- Track IT efforts specifically related to Y2K compliance;
- Report statewide Y2K status;
- Assess departments' Y2K funding requests and Budget Change Proposals (BCPs); and
- Ensure state entities are fixing the potential Y2K risk within their mission critical systems and supporting Y2K activities.

DOIT IT Project Office

The DOIT created the IT Project Office to foster a higher success rate for the state's IT projects. The Project Office adheres to a "statewide, enterprise-wide" perspective to ensure that IT projects initiated within state government are consistent with statewide strategies, policies and standards. It advocates successful and effective management of state IT projects through appropriate oversight and advocacy. Additionally, it promotes communication between the Administration and state organizations with regard to business priorities.

Within each state entity, the Project Office promotes a broad-based strategic focus versus individual project focus. The Project Office's goals are as follows:

- Ensure IT projects are consistent with statewide strategies, policies, standards and state organization business and IT strategies;
- Promote successful and effective IT project management through oversight and advocacy;
- Promote partnership between business and IT organizations;
- Promote organizational focus (versus project focus) and project coordination within state organizations, and assess organizations' ability to undertake multiple projects;
- Ensure appropriate monitoring of IT projects to determine when external assessments are required to ensure project success; and
- Develop and maintain a computer-based system for use by the DOIT, the Legislature and departments for all state information technology projects.

Administrative Section

The Administrative Section is responsible for providing budgeting, fiscal, personnel services, procurement, facility, and other administrative support to the Department of Information Technology (DOIT). These responsibilities include dealing with state departments, providing administrative support to the CIO and senior management, coordinating the departmental budget, coordinating contracts with control agencies and vendors, performing necessary fiscal services, accounting operations, personnel and payroll transactions, and providing internal information management services.

Specific objectives for the fiscal year 1998-99 include:

1. The completion of an employee policies and procedures manual;
2. The development of a more comprehensive monthly budget report; and
3. A minimally disruptive relocation of a portion of the staff to new office space.

Advisory Councils

Senate Bill 1 (Chapter 508, Statutes of 1995) required the establishment of advisory councils to assist the State Chief Information Officer (CIO)in the development of statewide information technology policy. Accordingly, the Department of Information Technology (DOIT) assembled two advisory councils, one consisting of state government information

technology and policy executives, the other consisting of experts from the private, academic and nonprofit sectors.

California Information Technology Commission

The CITC membership represents the private sector, academia, nonprofit organizations and other non-state governmental jurisdictions. California's private technology industry has set the standard worldwide for excellence and innovation. Through the CITC, the DOIT has tapped into the expertise and experience of this invaluable resource, helping to bring proven private sector solutions to state government. The CITC meets on a quarterly basis and subcommittees of the commission meet regularly on a schedule determined by the members.

Mission

The CITC advises the State of California's Chief Information Officer with respect to the management of a long-term direction and vision that will enable California to implement the best information technology practices, as a means to support and improve critical state functions.

Purpose

The CITC's purpose is to review and advise the California Chief Information Officer concerning issues that foster the optimum use of information technology and information management techniques in state government. This purpose will be achieved through such methods as:

- Advising the CIO on the development of California's long-term technology vision and strategy;
- Identifying best information technology practices in private and public sector organizations;
- Exchanging information to enable members and agencies to keep abreast of advances in information technology and the management of information;
- Establishing a framework for joint information technology ventures between the private and public sectors;
- Identifying business and technology trends that will have an impact on California's use, management and procurement of information technology, and
- Fostering and promoting positive relationships between the state and vendors based on teamwork and shared objectives.

Information Technology Coordinating Council

The Information Technology Coordinating Council (ITCC) is composed of agency and department CIOs. This advisory council's primary purpose is to recommend changes in state policy and procedure which allow for the optimum use of IT and information management techniques in state government. This purpose is achieved through such methods as:

- Fostering and promoting the use of IT at all levels in state government;
- Participating in the DOIT's development of IT policies and procedures;
- Participating in subcommittees to address IT issues of statewide interest or impact;
- Pursuing coordinated multi-agency information technology solutions to common challenges and opportunities;

- Exchanging information to enable members and constituents to keep abreast of advances in information technology and the management of information;

- Building on the state's past information technology successes; and

- Fostering pride and innovation through the recognition of state information technology success stories with the state's annual Information Technology Award.

In 1998 the ITCC met monthly to discuss state IT policy issues and present information relevant to state IT operations. For those IT policy issues that required more focused attention, subcommittees were formed throughout the year for the purposes of in-depth policy discussions and comment/review cycles. The subcommittees formed in 1998 were:

1. Project Initiation and Approval – This subcommittee included representatives from the Department of Water Resources(DWR), Franchise Tax Board (FTB), Employment Development Division (EDD), Department of Justice (DOJ), Department of Food and Agriculture, and Teale Data Center (TDC). This subcommittee provided input and guidance concerning the proposed reporting requirements and forms for the new Project Initiation and Approval process.

2. IEEE – This subcommittee includes representatives from the EDD, CDC, Board of Equalization (BOE), California Highway Patrol (CHP), and Resources Agency. This subcommittee provides on-going guidance with regards to the State's partnership with the IEEE training and certification program.

3. Enterprise Systems — This subcommittee includes representatives from the BOE, California Department of Transportation (CalTrans), CDC, Department of Finance (DOF), FTB, State Controller's Office, Health and Welfare Agency, Business, Transportation and Housing Agency, and State and Consumer Services Agency. This subcommittee provides on-going guidance and advice in regards to the State's strategy for Enterprise Systems.

4. Operational Recovery – This subcommittee includes representatives from the FTB, CDC, TDC, CHP, DOF, Department of Motor Vehicles, Department of Social Services, and Department of Health Services. The purpose of this subcommittee is to assist the DOIT in formulating operational recovery policies and reviewing operational recovery plans.

5. Oversight – This subcommittee included representatives from the DOJ, DWR, FTB, EDD, and CalTrans. This subcommittee reviewed and provided comments on the State's new IT Oversight policy.

National Association of State Information Resource Executives

The State of California is an active member of the National Association of State Information Resource Executives (NASIRE). NASIRE's membership includes State Chief Information Officers of all 50 states and six U.S. territories, administrators, 695 representatives from federal, municipal and foreign government and state officials who are involved in information resource management, and 89 technology corporations. The organization was founded in 1969 to be the leading forum for addressing the opportunities, implications and challenges of improving the business of government through the application of IT.

In 1998 California's State CIO served as the president of NASIRE, and the DOIT actively participated in a number of NASIRE conferences, events and activities. The DOIT assumed an active role in the NASIRE-led efforts related to Year 2000, electronic commerce, personnel recruitment and retention, devolution, and telecommunications. Towards the close of 1998, the DOIT acted as the state host for the annual NASIRE conference held in San Diego, California. The conference was attended by more than 300 state and federal IT executives providing perspectives from all parts of the nation.

In 1999 the DOIT will continue involvement in the NASIRE-led efforts, particularly in the areas of electronic commerce and Year 2000.

3 Developing a Statewide Plan for Information Technology

State of California IT Strategic Plan

It is the responsibility of the State Chief Information Officer (CIO) and the DOIT to develop statewide strategies and plans for the investment and operation of the State of California's IT projects and resources. The purpose of statewide guidance, according to the DOIT's enabling legislation, is to reduce the cost of government, enhance services to Californians, lower the cost and risk to California's taxpayers, and make government more accessible to the public.

The State of California's IT Strategic Plan provides an enterprise-level view of the state's IT resources as they exist today and what they should be in the future. The IT Strategic Plan also provides the vision of what the desired future will be, the framework to make that future possible and offers state government the roadmap which will move California forward.

To support this vision, the IT Strategic Plan lays out five key strategies and several initiatives that the State of California must undertake to construct this roadmap to the 21st century.

- Strategy #1 -- IT policy reform encompassing procurement reform, financial and budgetary control, planning and coordination, and project approval, initiation and oversight.
- Strategy #2 -- Infrastructure re-engineering encompassing network consolidation, data center consolidation and business resumption planning.

The IT Strategic Plan embraces the following vision:

One state, one IT infrastructure. *The State of California will advocate the use of interoperable, scaleable, interconnected information systems throughout state government to provide flexibility and ease of access to government services to all Californians, thereby contributing to excellence in government and supporting the economic progress in California.*

- Strategy #3 -- Statewide IT initiatives encompassing the Year 2000 program, enterprise systems, management project and technical architecture.

- Strategy #4 -- Initiatives encompassing electronic commerce.

- Strategy #5 -- Emerging issues encompassing staff recruitment and retention, and information privacy and security.

Enterprise Systems Strategy

The State of California spends nearly $2 billion annually on IT and telecommunications systems. Many of these systems produce, use and process management information that has value to multiple state agencies. However, because the state has a long-term practice of delegating a great deal of administrative responsibility to individual departments, the state needed a strategic policy for enterprise systems to ensure that they provide the greatest possible benefit to the state's business operations at the least possible cost.

To meet this strategic need, the DOIT commissioned the Enterprise Systems Subcommittee of the Information Technology Coordinating Council (ITCC) in July 1997 to recommend an overall direction for a statewide strategy for developing and implementing systems that are enterprise-wide in scope. In September 1997, the Enterprise Systems Subcommittee completed its final report which contained a number of recommendations for next steps. In 1998 the DOIT made significant progress in implementing those recommendations:

1. The DOIT formed a standing committee with representatives from the State's major control agencies — the DOF, State Controller's Office, Department of Personnel Administration, and Department of General Services (DGS). The purpose of this standing committee was to coordinate control agency data requirements in support of the State's enterprise systems strategy.

2. The DOIT authorized enterprise systems pilots in addition to those that were previously authorized. The California Department of Transportation (CalTrans) and Department of Water Resources (DWR) were approved as Enterprise Systems in addition to the Health and Welfare Agency's Data Center (HWDC) and DGS.

3. The DOIT facilitated the formation of a consortium of state departments seeking a common administrative system for human resource functions. The consortium consists of the Franchise Tax Board (FTB), California Department of Forestry (CDF), and Department of Parks and Recreation. The consortium has completed a needs analysis, and is in the process of determining further commitment to the consortium approach.

4. The DOIT formed the Enterprise Systems Standing Committee of the ITCC for the purposes of continuing the efforts of the first Enterprise Systems Subcommittee. The committee has received on-going status reports from the pilot projects, discussed state infrastructure needs to support these types of systems, and will participate in a review of the state's overall progress with Enterprise Systems.

5. The DOIT has engaged a consultant to review the state's Enterprise Systems efforts over the last 12 months. The review will consist of "lessons learned" from the pilots, a review of the overall

accomplishments, and recommendations for next steps. This review will lay the foundation for the DOIT's efforts in 1999 in meeting its legislative mandate for Enterprise Systems.

Data Center Consolidation

In 1997 the DOIT completed the data center consolidation study that was required in legislation creating the department. The study was performed for the DOIT by the Deloitte & Touche Consulting Group, which worked under general subject matter and methodology guidelines provided by the DOIT, but independently developed its findings and recommendations.

In submitting the study final report, the DOIT identified actions it would take in implementing the Deloitte & Touche recommendations. These actions were developed with guidance from a steering committee that included representatives of the Health and Welfare, Business, Transportation and Housing, and State and Consumer Services Agencies; the Department of Finance; and the Office of Planning and Research:

Deloitte & Touche recommended, and both the steering committee and the DOIT concurred, that no effort to implement consolidation should interfere with the activities by the affected data centers and departments to remediate their Year 2000 problems. Nevertheless, the DOIT has been able to establish and enforce policies for data center consolidation for new systems development, and for the ongoing operation and management of the existing state data centers.

The DOIT continues to require that any new centralized computing facilities be located at one of the existing consolidated data centers unless compelling business requirements exist for alternate siting, and the department has identified and is able to support the operational recovery and security requirements of the proposed system. The DOIT also reviews all new infrastructure investments by the Tier

Work continues at a brisk pace at the new Teale facility in Rancho Cordova. It is envisioned that the two state's largest data centers will one day be consolidated at this location.

2 and Tier 1 data centers recommended for consolidation to ensure that any such investments are not inconsistent with a future, single, consolidated environment.

The DOIT is particularly concerned with the need to develop new skill sets and support capabilities for evolving technical requirements. In recognition of the increasing cost and difficulty of recruiting, training and recruiting technical personnel with specialized skills, the DOIT is working with the consolidated data centers to limit the development of new centers of expertise to one or two concentrated facilities.

Such functions include NT and UNIX-based system support, electronic messaging and user directories, and security functions. The Teale and Health and Welfare Agency data centers have been especially cooperative with the DOIT in efforts to reduce duplication, and to provide complementary redundancy when necessary to meet departmental business requirements.

The Business, Housing and Transportation Agency, and the Teale Data Center and the DOIT, have obtained approval for a plan to replace the existing Teale central computing facility with a new facility. The Deloitte & Touch study noted that such a facility was a necessary first step for any effort to consolidate the existing Tier 2 facilities into the Teale environment. The Teale facility is expected to be ready for use in the middle of 1999.

Overall, the Deloitte & Touche study found that compared with other states, California's data centers were relatively well consolidated under the framework of the 1972 data center legislation. Moreover, the study found that the quality and cost of service associated with the Teale and Health and Welfare Agency data centers are at least comparable to those of the private sector. Nonetheless, the study found considerable avenue for improvement, particularly in those environments that have remained or recently developed outside of those data centers.

The DOIT believes that while there are direct financial benefits to be derived from the consolidation of mainframe facilities and from the prevention of the proliferation of new distributed computing facilities, there are other, more compelling reasons for an ongoing consolidation strategy.

Most important of these is the need to maximize the value and utility of the state's considerable investment in its skilled technical staff. The mainframe environment presents unique problems, as this highly-specialized workforce is already reaching retirement age, and few if any new professionals are entering the legacy support fields.

This circumstance is common to both the private and public sectors. The DOIT believes that it will be increasingly important to limit the number of mainframe professionals required to maintain the state's systems, and that further consolidations of the Tier 1 and Tier 2 environments will be the best way to address this future skills shortage.

The state is already experiencing difficulties in recruiting and retaining persons with the skills necessary to support many non-mainframe information technology systems, including both the operating platforms for internet, database and office automation servers and workstations, and the application software that resides on those systems. At the same time that the DOIT and other departments are working to improve the rate of recruitment and retention of these skilled

technicians and managers, the DOIT believes it is at least as important to reduce the volume of the state's demand by careful consolidation.

In every case, as with all DOIT policies, the DOIT is careful to ensure that the application of its policies is done with consideration of the business requirements of state government. While consolidation is an important goal, that goal is only worthwhile as an effective means to apply information technology to improve the state's business functions.

Each decision regarding the location of new or existing data processing systems is based upon an enterprise-level evaluation of the proposed location's ability to solve the presented business problem. No consolidations will be required or planned unless there is demonstrables benefit exist and costs are acceptable for that consolidation.

Network Privatization (CIIN)

In December 1996, the Department of Information Technology, in partnership with the Department of General Services Telecommunications Division (DGS/TD), released a new strategic plan for the state's networks. This report, entitled *California Integrated Information Network (CIIN)—A Strategic Plan for CALNET and All State Telecommunications Networks*, made a series of findings regarding CALNET and the state's other telecommunications networks, and outlined a strategy to address the problems with CALNET while establishing a process to achieve real network consolidation.

During the past year, the DOIT and the Department of General Services have together continued to implement that strategic plan. The primary goal of that plan, the privatization of CALNET and the associated network services, was scheduled for completion during the first half of 1998. Due to delays in the procurement, primarily due to the complexity of the effort and the vendor's unfamiliarity with the alternative procurement method employed, the state did not issue its intent to award the contract until August 1998.

The award of the contract was delayed by a protest filed by one of the losing bidders, and then by a civil suit filed by that same bidder, along with two non-bidding vendors. Final award was made in December 1998.

The DOIT continues to coordinate the state's telecommunications users into a single business entity to honor the state's commitment to use the CIIN contract in return for the competitive pricing and quality of service bid in CIIN.

In January 1997 the DOIT issued a Management Memo that required state agencies to use CALNET or DGS/TD contract services unless specifically exempted by the DOIT. Since the issuance of that Management Memo, the DOIT has received only a few requests from state departments for exemption from the requirements of the Management Memo. The DOIT continues to review those requests to ensure that the department's business functions would not be impaired or made unacceptably costly by compliance.

The DOIT is now working with the DGS/TD and state departments to plan ongoing state data and voice telecommunications activities to take advantage of the pricing and service opportunities offered by the CIIN contract environment, and to ensure an orderly conversion of the state's critical telecommunications services to the vendor environment.

Overall, the DOIT continues its commitment to the CIIN vendor-owned infrastructure model as the most adaptable to the rapidly changing state requirements. The DOIT believes that only large telecommunications vendors can develop, implement and maintain the high-bandwidth and complex technologies of modern telecommunications that will enable the state to achieve the vision of an online state government.

Disaster Recovery

Disaster preparedness is a fundamental responsibility of government entities that provide essential services. While the DOIT is responsible for state agency disaster recovery planning with respect to information technology, the state must involve business program management in planning to ensure that its critical functions will survive, or at least be recoverable after, a disaster.

Reviews of the operational recovery plans filed annually with the DOIT by each state department indicated that substantial deficiencies existed in a majority of those plans. Of particular concern were those departments that did not have adequate procedures for ensuring that data and programs would be recoverable after the destruction of the production system. In addition, the DOIT found that many departments did not periodically test their recovery plans to ensure effectiveness, and most did not maintain sufficient documentation to allow recovery by any but a few key individuals.

The DOIT has initiated several efforts to address this situation. In 1996, the DOIT commissioned the development of a documented methodology that state agencies can use to conduct a business impact analysis. This Business Impact Analysis methodology is available at no cost to state agencies who wish to use it to assist their planning effort; several state agencies have already adopted the tool.

The DOIT has developed, with the assistance of an operational recovery planning consultant and disaster planning professionals from several state departments, new policies and guidelines for the operational recovery plans that must be filed with the DOIT.

These new policies establish a three-phase effort to address the deficiencies in the state's information technology disaster preparedness. The first phase, which will become mandatory with plans filed during fiscal year 1999-2000, will require that each plan ensures that the system can be recovered at some point after a disaster. Beginning with this phase, which will put increased emphasis on testing and

Maintaining continuity of service is a fundamental component of operational recovery.

documentation of the plans, the DOIT will return for correction any plan which does not demonstrate recoverability of all mission-critical applications.

During the second phase, which will be implemented with the plans filed during 2000-2001 fiscal year, will add the requirement that departments have determined, through a sound business-impact analysis process, the maximum outage that each mission-critical information technology system can endure before the supported business function is intolerably disrupted.

Finally, each department must demonstrate in plans filed during the 2002-2003 fiscal year that it has developed a plan that will ensure recovery of mission-critical applications within the business-derived maximum acceptable outage, and that the department has either implemented those plans, or has requested and been denied funding for the implementation of those plans.

The DOIT will continue to require that new mission-critical systems be conceived and implemented with adequate provision to ensure that the business-based maximum acceptable outage for that system can be met on an ongoing basis.

The overall goal of these DOIT efforts is to ensure that decisions to accept and to address the risk of disastrous disruption to those state services supported by information technology are made with a business-based understanding of the vulnerabilities and importance of those services.

Information Security

The DOIT is broadly responsible for establishing, monitoring and enforcing information technology security policies and practices in California state government. The most important tools for executing this responsibility are the DOIT's authority to review and approve new information technology projects, and requirement that departments file reports of information technology security incidents with the DOIT. During the past year, the DOIT has continued its efforts to improve the effectiveness with which it applies these tools. The DOIT believes that these efforts, while necessarily incremental, will enable rapid improvements in the security preparedness of the state.

The DOIT now requires that proposals for new information technology projects include specific provision for information security when the proposed system may increase the vulnerability of private information to unauthorized disclosure. The DOIT continues to focus attention on ensuring that departments are aware of the special risks associated with internetworking, and that their projects are designed appropriately.

In order to gain a greater understanding of the threats encountered by state government, and to provide assistance to departments in responding to actual attacks, the DOIT contracted with the federal Department of Energy Lawrence Livermore Laboratories Security Incident Technology Center (SITC) to develop an incident reporting and response capability for the state.

Departments are currently required to file reports of security incidents with the DOIT. The SITC developed for the DOIT a secure, encrypted system to allow departments to file online reports of security incidents. The SITC provides monthly summaries of these incidents to state departments, including experienced attack methods, emerging threats, preventive measures, and popular targets.

The DOIT and SITC are expanding this relationship during the current fiscal year to increase the amount of information provided to state departments on security threats and responses, and to offer consulting services to evaluate general security vulnerabilities and to investigate specific attacks. The SITC will continue to provide immediate assistance to departments in responding to attacks, including technical direction on identifying the level of compromise, and on closing the exposure.

The DOIT has been working with departmental and legislative staffs who are developing plans to require the use of new technologies for state business. In particular, the DOIT has been involved in efforts to use electronic means to deliver government services, and to obtain and publish information. The DOIT maintains current information regarding the availability and effectiveness of security and confidentiality methods for electronic commerce and Internet communications, and is assisting project and policy planners to ensure that proposals for new requirements include prudent and reasonable consideration of security exposures and capabilities.

The DOIT has been particularly concerned with the ability of currently-available technologies and services to support the authentication and non-repudiation requirements for electronic delivery of certain government services. Practical implementations of technology are available to enable the acceptance of payments over the Internet, but such transactions must still be limited to those in which private information about individuals or entities is not transmitted by the government to large numbers of individuals. While certain technologies, most notably digital certificates, partially address the need to ensure that information is only delivered to an authorized individual or entity, the business implementations of these technologies remain incomplete. Competing and complementary technologies such as biometrics and smart cards are similarly immature.

In general, the DOIT is continuing its efforts to ensure that information technology does not compromise the state's custodianship of confidential or sensitive information about its citizens, business and organizations. While the issues of security for information technology systems often are similar to those for manual processes they supplant, the Internet and electronic commerce bring. special new risks that must be identified and carefully addressed.

4 Improving State Management of Information Technology

Reducing the Risk of Failure

There are risks inherent in the implementation of all IT projects, but the risks associated with implementing large and complex IT projects remains in most instances very high. As noted in our previous annual report, research indicates that over 31 percent of the approximately 175,000 IT development projects in the United States will be canceled prior to completion. The research also indicates that 52 percent of projects nationwide will cost almost twice as much as their original budgets, while only 16.2 percent of projects will be completed on-time and on-budget. In large companies — California state government falls into this category — only 9 percent of projects will complete on-time and on-budget. In 1995, American companies and governments spent $81 billion on canceled IT projects.

These statistics demonstrate that the risk of IT project failure is quite real in all sectors, and is by no means unique to California state government. The fact is that some level of IT project failure must always be anticipated and planned for regardless of an organization's location, market position, size, structure, budget, culture and even its IT maturity levels and previous IT experience. However, the goal of the DOIT's oversight effort is to minimize the potential for IT project failures, and to lessen the effects of the inevitable failures, through a combination of methods so that over time California achieves an increasingly higher ratio of project success. Accordingly, the DOIT has focused on the following primary instruments for mitigating IT project risks:

- Project initiation and approval program;
- Project oversight program;
- Independent project oversight;
- Risk Assessment Model (RAM); and
- Oversight Contracts.

In addition, the DOIT is pursuing additional methods to further improve IT project risk mitigation such as:

- Improving the state's model contract for IT projects;
- Sponsoring risk management training and workshops for state projects; and
- Comissioning a survey to determine how the RAM can be improved.

Project Initiation and Approval

The DOIT has been given responsibility throughout the project lifecycle for enforcing practices to increase the likelihood of project success. In addition, the DOIT is required to add an enterprise perspective to planning, implementing and operating state IT projects. These goals require the DOIT to perform tasks in support of project initiation which are substantially different than those performed in the past.

As reported in last year's annual report, the DOIT, in cooperation with the Department of Finance (DOF), defined a new methodology governing the consideration of approval and funding of IT-related proposals. This methodology was published in a report to the Joint Legislative Budget Committee in December 1997, entitled *State of California Information Technology Project Initiation and Approval Report*.

In support of the new methodology, the DOIT and the DOF implemented new policies and procedures governing the consideration of approval and funding for IT proposals. The purpose of the new policies were to:

(1) establish a uniform format for use by state departments and agencies in identifying and reporting their respective IT projects' needs and statuses, and

(2) enhance the coordination between the DOIT and the DOF regarding the consideration of IT funding requests.

The new policies and procedures significantly changed the previous project initiation and approval process in the following manner:

- A sequential process was established for submission and review of IT project proposals by the DOIT and the DOF;
- The DOIT functions as the "conduit" between departments and the DOF with respect to IT project proposal reviews and approvals;
- A "pre-review" of IT project proposals was implemented between the DOIT, departments and the DOF prior to full FSR development and submission;
- Upon DOIT approval, the DOIT acts as an "advocate" for agencies and departments throughout the budget process; and
- The DOIT committed to certain time frames for its reviews.

The final policies and guidelines supporting the state's re-engineered IT investment process were released in March 1998. The DOIT and the DOF provided several training sessions to all departments and agencies on:

- What the new policies encompassed;
- How the new process operated between the departments, agencies, the DOIT and the DOF; and
- What was required in the new or modified reporting documents.

The new policies became effective June 1, 1998 to coincide with the 1999/2000 Governor's budget development process. In an effort to further ensure appropriate and prudent investment of funds in state IT efforts, the DOIT became an integral participant in the State's annual budget change proposal (BCP) process.

To support DOIT's role as in the Governor's annual budget development process, the DOIT issued Management Memo 98-11 in July 1998 describing the DOIT's role in reviewing budget change proposals. For the 1999/2000 budget development process, the DOIT has processed more than 350 project reporting documents supporting $1.6 billion of IT investments.

Project Oversight Program

In accordance with statutory requirements established in the Government Code through the enactment of SB 1 (Chapter 508, Statutes of 1995), the DOIT has broad responsibility for overseeing a wide array of IT activities in specified areas of California state government to help the state successfully apply IT to meet its business needs. Specifically, as it pertains to IT oversight in general, and to the oversight of IT projects in particular, the Government Code requires the DOIT to:

- Develop specific statewide strategies, policies, and processes, including oversight, to … improve the state's overall management of information technology projects, … (Government Code, § 11701b)
- Provide leadership, guidance and oversight of information technology in state government … (Government Code, § 11710d)
- Oversee the management of information technology in state agencies and the development and management of information technology projects … (Government Code, § 11711b)
- Monitor agency information technology projects … (Government Code, § 11712)

The DOIT has responded to expectations and requirements concerning the oversight of state IT projects through the implementation of a statewide IT oversight program.

DOIT's statewide IT oversight program is fully derived from applicable legislative mandates, executive branch orders and directives, good-government business principles and industry IT management best practices pertaining to the oversight of IT projects.

Oversight Overview

Project oversight is one of a number of IT management functions dedicated to the common goal of increasing the probability for IT project success.

Most of these IT management functions are grouped under a project management banner and address areas such as quality management, task management, resource management, configuration management, contract management and procurement management.

Project oversight stands separate from these other IT management functions, however, in that it does not have responsibility for the successful definition and implementation of an IT project, but rather acts in a check-and-balance capacity to the other functions.

Essentially, project oversight facilitates IT project success by assessing project management to help ensure that the right things are done, and that things are done right. More specifically, project oversight operates by

verifying or, taking direct steps to help ensure that IT projects:

- Are structured and managed in conformance with established standards and industry best practices;
- Are implemented in compliance with all relevant processes, and requirements;
- Progress in accordance with approved project plans; and
- Achieve defined success factors and obtain expected objectives.

Although project oversight is most active during an IT project's implementation phase – monitoring, evaluating and reporting on the activities, management and status of the project as well as on issues that jeopardize the project – it is also active in other lifecycle phases. For example, project oversight is concerned with the identification, assessment and prioritization of project risks and the planning and application of appropriate risk mitigation strategies in a project's planning phase. These actions help ensure that IT projects are properly defined and setup, and therefore begin with a high potential for success.

In addition, project oversight is also concerned with narrow-focused operational audits verifying successful implementation and appropriate maintenance and use in a project's production phase. These actions help ensure that production systems are operated and maintained in a manner capable of producing the benefits expected by stakeholders.

Oversight Program Objectives

The goal of the DOIT's statewide IT oversight program is to increase the state's ability to successfully apply IT to meet its business needs by facilitating IT project success. Derived from and aligned with this goal are several oversight program objectives that include the ability to:

- Identify and remediate risky project activities and problem situations at the earliest possible time;
- Provide for intensive monitoring, evaluation and reporting on projects where appropriate;
- Permit a timely response from the DOIT when major problems occur on an IT project; and
- Share "best practices", "lessons learned" and other information on IT project management and oversight with the state's IT community.

Oversight Program Focus

The primary focus of the DOIT's statewide IT oversight program is the state's most significant IT projects. These IT projects are designated by the DOIT as significant due to one or more project characteristic or factor such as high costs, high business criticality (operations and/or service delivery), legislative mandates, administration policy importance (health, safety, etc), revenue generation, and/or high public profile.

These significant IT projects represent for the most part those new automation activities that must succeed in order for California state government to continue with significant portions of its day-to-day business operations and the uninterrupted delivery of critical program services to the public.

Failure of any one or more of these significant IT projects would have substantial consequences for the state including, but not necessarily limited to, monetary losses, service and/or service level disruptions, loss of public confidence in state government, loss of credibility by state government, failure to meet legislative mandates, missed opportunities to advance the Administration's programs and policies, and many other equally severe and/or undesirable effects.

In addition, the DOIT's statewide IT oversight program also strives to ensure that reasonable and prudent oversight is performed on all other IT projects in California state government. Failure of these other IT projects, while not resulting in the same substantial difficulties and/or losses for the state as would the failure of one or more of the significant IT projects, would still have an adverse impact on state business operations and service delivery.

Oversight Program Structure

The DOIT's statewide IT oversight program encompasses five functional areas – Architecture, Problem Avoidance, Problem Recovery, Outreach, and Special Activities. The following articulates the DOIT's responsibilities and activities pertinent to each of these areas.

Architecture:

Statewide Architecture: Defining, implementing, maintaining, promoting and ensuring compliance with a statewide oversight architecture comprised of various plans, principles, policies, processes, procedures, standards and guidelines that establish and articulate the state's IT oversight program.

This statewide architecture forms the basis (framework or blueprint) for all departmental and control agency oversight activities and helps to ensure an implementation environment that is conducive to IT project success.

Departmental Architectures: Reviewing, evaluating, making recommendations concerning and providing limited assistance to departments in their efforts to define, implement, maintain, promote and ensure compliance with departmental IT oversight architectures.

These actions help ensure that departmental oversight architectures are aligned with the DOIT's statewide architecture and responsive to departmental needs.

Problem Avoidance:

Project Initiation Phase: Reviewing selected aspects of, as well as reviewing input from other sources concerning, IT project proposals to understand their unique oversight needs and verify that appropriate and necessary oversight will be applied, primarily by evaluating, making recommendations, and/or establishing requirements based upon the completeness and accuracy of the risk analysis performed on, and the responsiveness and workability of the mitigation measures applied to, the proposed projects.

These actions help ensure that IT projects are properly structured and that all necessary project plans, resources, personnel and other critical components have been identified, created, addressed and/or obtained prior to implementation, thus increasing the project's probability for success.

Project Implementation Phase: Monitoring, evaluating and reporting on the on-going

activities, management, status and issues related to the implementation of IT projects.

These actions help ensure that IT projects are managed in a manner that conforms with established standards and industry best practices, implemented in a manner that is compliant with all relevant processes, conditions and requirements, and progress in a manner that is in accordance with approved project plans. These actions also help ensure that defined success factors are achieved and that expected objectives are obtained.

Project Production Phase: Performing narrow-focused operational audits on selected aspects of the state's IT systems to verify successful implementation and appropriate maintenance and use, and facilitating the sharing of information on best practices for the oversight of IT projects as well as the lessons learned from the actual implementation of IT projects in California state government.

These actions ensure that production systems are operated and maintained in a manner capable of producing the benefits expected by stakeholders, and that the state IT community as a whole benefits in some measure from every department's experience with their IT projects.

Problem Recovery:

Reviewing, evaluating, recommending remedial actions for, and providing limited assistance to departments in bringing such actions to bear on, errant IT projects.

These actions assist departments in putting the pieces of problem projects back together with the least amount of damage, or provide the state with the information it needs to successfully terminate problem projects.

Outreach:

Performing activities to inform and educate departments about state oversight requirements and the best practices advocated and/or employed in the public and private sectors.

These actions provide state departments with the knowledge and skills that, when thoughtfully and diligently applied, greatly enhance their ability to successfully implement IT projects.

Special Activities:

Performing other special activities as appropriate and necessary for the successful definition, implementation and execution of a statewide IT oversight function. These special activities include, but are not necessarily limited to, surveys and other related feedback instruments, compliance reviews, project status briefings, peer reviews, risk analysis and mitigation plan evaluations, point-in-time project assessments, continuing "eyes-and-ears" project presence, critical project reviews, risk tool enhancements, a lessons learned program, advisory committee support, and participation in various steering committees and task forces.

Oversight Contracts

As a principal business method, the DOIT contracts with IT oversight consultants to acquire the independent, expert services necessary to successfully define, implement and execute a statewide IT project oversight program. These contracts for IT oversight services, generally fall into three categories – "point-in-time" assessments, continuing "eyes-and-ears" presence, and Risk Analysis & Mitigation Plan (RAMP) Evaluations.

DOIT recovers the cost associated with these contract oversight services from the agencies that receive the contract services. Specifically, as authorized by the annual budget act, the DOIT has an existing expenditure authority of $750,000 dedicated to contact oversight services, with all funding associated with this expenditure authority recovered through reimbursements from the recipient state agencies.

The following is a brief description of the three primary types of contract oversight services employed the DOIT.

Point-In-Time (PIT) Assessments

This type of contract is a critical oversight tool that is primarily used when in-depth information is needed about an IT project's current status or to gain an understanding of the issues that may be impacting a project and thereby placing a project's success in jeopardy. The DOIT anticipates using approximately 20 PIT assessments during 1999.

Continuing "Eyes-and-Ears" (E&E) Presence

This type of contract allows the DOIT to establish a continuing presence on the state's most complex, costly, critical, and/or high profile IT projects through the use of consultants who act as the "eyes-and-ears" for the DOIT in lieu of an Oversight Manager being assigned to the project.

This arrangement provides flexibility to the DOIT to accommodate fluctuating workloads and addresses special circumstances where unique knowledge, expertise or skills may be needed to successfully oversee an IT project.

The DOIT currently has two of these E&E contracts in place for 1999. The first is on the California Child Support Automation Project (CCSAP), formerly known as the Statewide Automated Child Support System (SACSS) Project, which is managed by the Health and Welfare Agency Data Center. The second is for the Correctional Management Information System (CMIS) Project managed by the Department of Corrections. The DOIT will also place an E&E contract in 1999 on the State Automated Welfare System (SAWS) Project, also managed by the Health and Welfare Agency Data Center. In addition, the DOIT may place up to 2 additional E&E contracts on projects to be chosen from a pool of candidate projects at a future date.

Risk Analysis & Mitigation Plan (RAMP) Evaluations

This type of contract provides the DOIT, through consultants, with the unique expertise necessary to understand and relate to the DOIT the risks to a particularly complex or extensive IT project and the controls that are most appropriate to mitigate these risks.

Independent Project Oversight

To be truly effective, IT project oversight demands the earliest possible notification regarding potential impediments to progress. In this way, mitigation actions can be taken to reduce the risk of project failure. The most effective project oversight is applied in a condition of independence (i.e., the individuals performing project oversight must be detached from the organizational chain of command of the project managers). In this manner, oversight retains its impartiality and its findings are more valuable.

While the objective of employing independent oversight is to help ensure that state IT projects are implemented successfully, effective independent oversight is also important with respect to projects which experience serious difficulties and have to be terminated. In such cases, independent oversight helps to protect the state's interests by bringing to the project development process skilled expertise which helps the state to avoid contractual breaches while at the same time documenting a contractor's contractual performance. For projects which result in litigation, the information developed by independent project oversight contractors, and their expert testimony, may provide the state a measure of protection which it has not previously enjoyed.

Independent oversight employs a variety of management and technical review methods based upon professionally recognized processes or standards promulgated by organizations such as:

- Comptroller General [Performance Auditing (non-financial auditing) used by all public audit agencies and CPA firms];
- American Institute of Certified Public Accountants (AICPA) Statement on Auditing Standards (SAS) related to management consultants work; and
- American National Standards Institute (ANSI), including standard 1012 governing software and systems independent verification and validation (IV&V).

Independent oversight is a common practice in the private sector. However, utilization of independent oversight is now being rapidly accepted by state government IT managers.

Risk Assessment Model

One of the primary objectives of the DOIT has been to mitigate risk on IT projects. When the department was created, no tool existed to objectively gauge the risk associated with any given project. To accomplish this, the state needed a Risk Assessment Model (RAM).

As used by the DOIT and the State of California, a RAM is a term used to describe the arithmetic measurement of the level of potential risk associated with various components or categories common to all projects. In other words, a RAM, by assessing various factors relating to a project, can identify those riskier aspects or categories, which may then be mitigated or resolved by project managers. A formal risk assessment performed during the early stages of project planning helps to identify major areas of project risk, and may even be cause to cancel the project outright. Periodic assessment after project initiation provides tangible benchmarks for project managers and the DOIT to evaluate and plan appropriate remedial efforts if necessary.

In order to determine the appropriate risk assessment model for the DOIT, an evaluation was performed on various RAMs in use throughout the industry. The comparison yielded several common major categories of risk which were being evaluated by these tools:

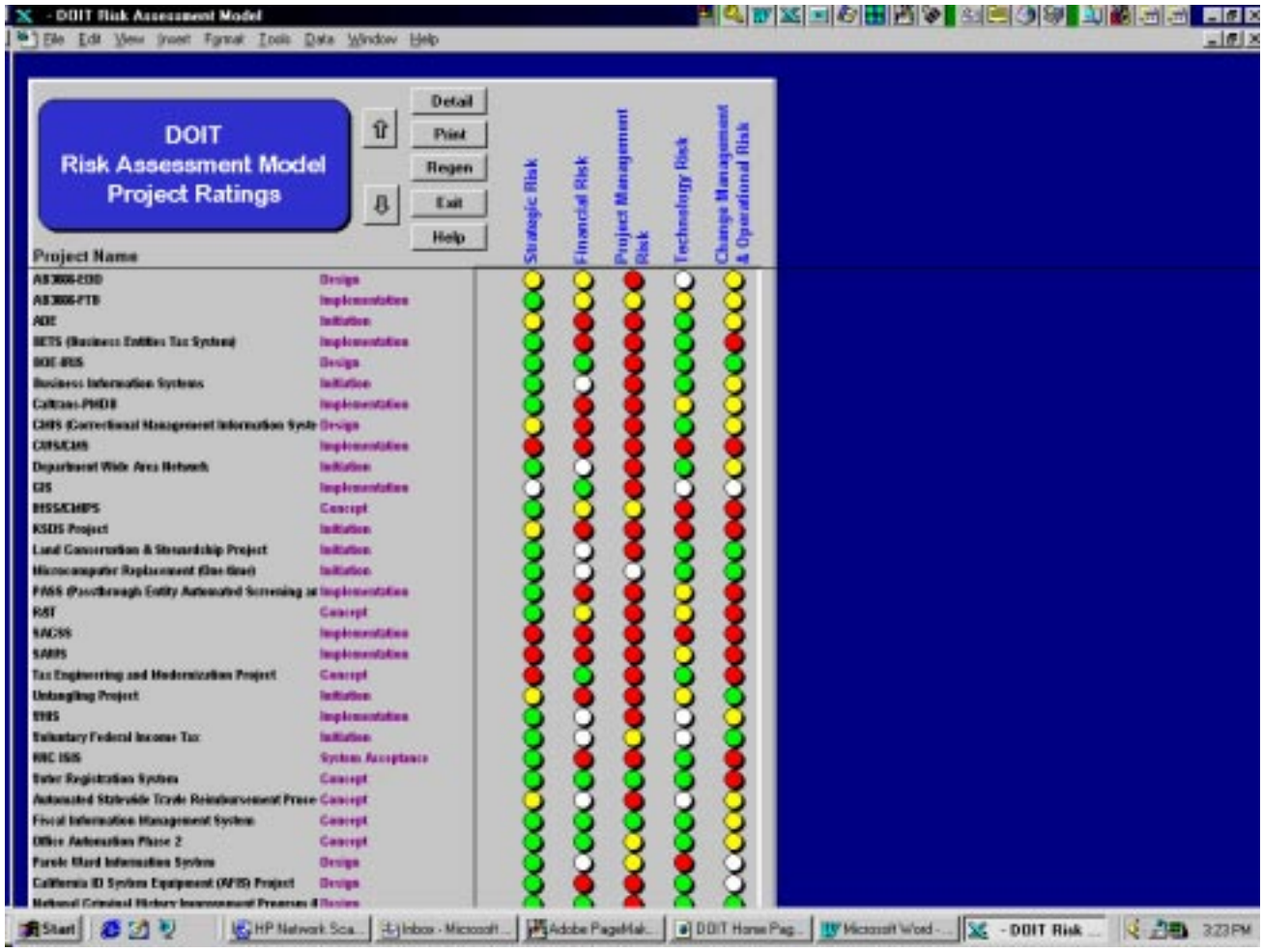
- *Strategic Risk* — The degree to which the proposed project is in alignment with business strategies;
- *Financial Risk* — The probability that the organization will be able to secure funding for the entire project life cycle from sponsoring agencies;

- *Project Management* — The impact on all areas of project management necessary to complete the project, including a realistic time frame, sufficient resources, necessary skill levels and a sound project management approach;

- *Technology Risk* — The degree to which the project must rely on new, untested or outdated technologies, including hardware, software and networks; and

- *Organizational Impact and Operational Risk* — The amount of change needed within the organization as well as the effort required for continued operations at project completion.

These categories form the basis of the DOIT's RAM. This tool is based on the best features of all the products evaluated and provides a sound model that is uniquely customizable to California's technology programs. It utilizes a standardized questionnaire to assess risk levels, which are produced through an automated report generation feature. The output from this tool, the Risk Assessment Report, provides a thorough overview of project risk areas and can be automatically generated when the survey is completed. The report provides a general



The DOIT Risk Assessment Model has been replicated by other states and several sovereign nations as a useful tool.

summary of risk scores in each of the five risk categories and a detailed analysis of responses to questions.

To ensure that the RAM continues to provide value to the state's IT community by accurately evaluating major project risks, the DOIT is continuously evaluating and incorporating suggestions and recommendations into updated versions of the RAM. For example, the DOIT conducted a survey in 1998 of numerous agencies to substantiate the benefits and identify additional recommendations for the RAM, which will be incorporated into the RAM in early to mid 1999.

Information Technology Procurement Policy Reform Through New Contracts

Procurement and implementation of IT projects entail many challenges for the state different from those faced in acquiring traditional goods or services. Unless these challenges are addressed, projects face the risk of missed deadlines, cost overruns, substandard products or even project failure. Over the past two years, the DOIT has worked in conjunction with the DGS to significantly reform the State's IT procurement policies in the areas of contract language and acquisition of major IT projects.

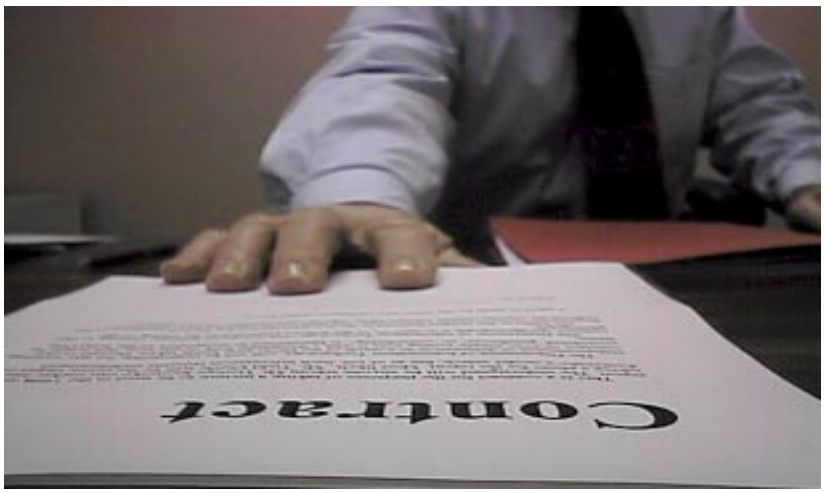
New Contract Procedures

In the area of contract language, the DOIT worked in conjunction with the DGS to ensure that agencies' and departments' contracts for IT projects contain language which promotes successful project completion with appropriate legal protection. In October 1997, the DOIT issued a Management Memo jointly with the DGS (MM 97-14) establishing contract guidelines for all major IT projects and requiring the use of specific contractual clauses. The policy requirements provide revised language to the state model IT contracts, including:

- A change clause, which provides a definition of certain limited conditions when the state may unilaterally direct a change to a contract;
- A termination for convenience clause, which provides a unilateral right for the state to terminate contracts, in whole or in part, without breach of the contractor;
- A stop work clause, which provides the state a mechanism to halt performance for up to 90 days (or longer if both parties agree) when a problem arises, in order to determine the best course of action to pursue; and
- A disputes clause, which requires internal resolution of disputes and an appeal process before a dispute can be escalated to court action.

The policy also requires additional considerations to address special risks in IT contracts, including:

- Enumerating specific deliverables or completion of defined tasks and corresponding delivery schedules. All payment schedules should coincide with that plan and be contingent upon the successful execution of those defined deliverables or tasks;
- Requiring creation of an "Executive Committee," a designated group with the authority to resolve potential disputes and approve resulting contract changes in an expedited manner. Executive Committees



New contract guidelines better protect the state's interest from the beginning of negotiations on new IT projects.

include representation from, at a minimum, the contractor, agency program management, agency contracting personnel, technical or quality assurance personnel, and those state oversight agencies which have indicated a desire to be included;

- Requiring warranty provisions which provide, among other things, that all work is in accordance with the contract requirements;

- Requiring provisions ensuring that contractor products address Year 2000 solutions; and

- Requiring that the state owns all works of authorship created by or provided by the contractor and related to the project, regardless of form, and whether complete or incomplete.

Procurement Procedures For Major It Systems

With IT projects, bigger is not always better. The sheer enormity of some IT systems can make them unwieldy, which can ultimately lead to missed deadlines, cost overruns or other project problems. In addition, the nature of IT projects creates unique challenges that the traditional procurement process designed for commodities is not equipped to address.

In the area of acquisition of major IT projects, the DOIT, in conjunction with the DGS, issued Management Memo 98-12 mandating specific procurement approaches for state IT projects estimated to exceed $5 million and deemed "mission critical" to the department. The Management Memo states that departments must utilize alternative procurements methods that demonstrate:

- Evidence that the contractor community has participated in preliminary dialogue on the state's requirements and is willing to engage in the contracting process (such as a Request for Information (RFI) process).

- Release by the state of an invitation to pre-qualify bidders, which includes the release of business-based requirements and an inquiry as to the capability and readiness of the supplier community to participate in the proposed project. This step may be combined with an RFI process.

- Business-based specifications structured to encourage maximum contractor innovation in providing business solutions.

- A project approach by the agency that has considered risk limitation and phased implementation.

- Concurrent confidential contract negotiations and proposal discussions prior to final bid submission.

- Selection of best-value proposal.

- A payment structure representing the critical objectives of the contract and appropriately designed to both stimulate performance by the contractor and minimize risk to the state.

Another important component of Management Memo 98-12 was the inclusion of "phased" implementation for the State's major IT projects. Phases were defined as the smallest set of tasks, resources and risks and utilize the shortest implementation schedules that will deliver useful and measurable business results. Wherever possible, the initial project phase was to be confined to delivering the essential core functionality that will provide the greatest portion of the benefits of the proposed system. There are many ways in which IT projects could be phased.

The intent of the Management Memo was to establish phased implementation as a requirement in the acquisition and management of major IT projects and systems and to provide some criteria to follow when departments undertake such efforts. As defined in Management Memo 98-12, phases must meet the following criteria:

- A phase is an economically and programmatically separable segment and should have an independent and substantial programmatic use even if no additional components are acquired.

- Funding may be identified and/or approved separately for each phase or for the entire project.

- Each phase, being separate and distinct, should provide value as a stand-alone project so that if the relationship is terminated after a phase, the work completed is still of value.

- A contractor will be paid for accepted deliverables.

Subsequent phases may be redesigned depending on results of early phases.

Furthermore, phased implementations:

- Are easier to manage individually than one comprehensive approach;

- Address complex IT objectives incrementally to enhance the likelihood of achieving workable solutions for attainment of those objectives;

- Provide for delivery, implementation and testing of workable systems or solutions in discrete increments, each of which comprises a system or solution that is not dependent on any subsequent increment in order to perform its principle functions; and

- Provide an opportunity for subsequent phases to take full advantage of any evolution in technology or needs that occur during conduct of the earlier increments.

Under the phased implementation approach, the agency incrementally awards and manages the project rather than requiring contractors to price and manage the entire effort at one time. This approach allows the agencies to make more informed decisions based on factual information rather than on projections and estimates.

Wherever possible, the initial project phase shall be confined to delivering the essential core functionality that will deliver the greatest portion of the benefits of the proposed system. Features and functions that are not essential to the delivery of core functionality and provide only marginal additional benefit should be planned for subsequent phases. When it is determined that all core functionality cannot be included in a single phase, project phases should be planned so that the majority of high risk tasks, such as applications development and cross-system interfaces, are completed and accepted before high-cost equipment, software licenses, facilities and network expenses are incurred.

Project Management and Project Managers: The Pursuit of Excellence

Project management represents a major category of risk in the implementation of an information technology (IT) project, and the lack of appropriate project management continues to be a significant deterrent to state efforts to implement projects successfully. Like so much else regarding state IT, it has been up to each individual state department to develop project management expertise. As a result, some departments are better able than others to manage their IT projects; however, even the most experienced department may find its project management capabilities inadequate for a particularly complex project.

In an effort to address the disparity among departments with regards to project management expertise, the Department of Information Technology (DOIT) continued its partnerships with three noted organizations to provide project management training and certification opportunities to both state staff and organizations. The first partnership was established with the University of California at Davis (UCD) Extension Service to develop a project management training program specifically tailored towards state IT projects and project management staff. The Project Manager Training and Certification Program entails 220 hours of instruction which, upon successful completion, would result in a University Extension, UCD certificate in Project Management. Candidates have the option of a standard format running approximately 24 months or an accelerated format which can be completed in one year. Since its inception in June 1997, the UCD program has provided 23 courses and has been attended by more than 500 enrollees.

In addition to the partnership with the UCD, the DOIT continued its partnership

Comprehensive Project Manager Training Classes are assisting California's IT workforce to best manage complex systems needed to support California services.

with the nationally renowned Project Management Institute (PMI) as an option for the certification of state IT project managers. The PMI utilizes experience, course work and examinations to certify project managers for a vast array projects — ranging from construction projects, IT projects, to massive aerospace projects. As state staff complete the necessary coursework and mandated experience, they now have the option to seek certification through PMI.

In 1998 the DOIT entered into a partnership with the Institute of Electrical and Electronic Engineers (IEEE) Computer Society with the objective of establishing a training and certification program based on IEEE project management best practices and standards. The first step in the partnership consisted of training a group of 40 state IT project managers in IEEE project management practices. The California Department of Corrections (CDC) entered into a similar partnership with IEEE to train a group of CDC staff in IEEE project management practices. The Employment Development Department (EDD) also entered into a partnership with IEEE on two efforts:

1) providing training, mentoring and certification services on one particular EDD project, and

2) providing project management practices training to key IT staff.

The DOIT's approach has been to work with selected state agencies to act as pilots for the partnership efforts. Upon proof of the concept (i.e., an acknowledged improvement in the project management capability of the pilot departments) additional state agencies will be encouraged to adopt the proven best practices and standards. The potential benefits from this approach are substantial, ranging from more successful state projects to significant savings in training, because project managers transferring from one state agency to another will not have to undergo training in a different project management methodology.

5 Addressing the Year 2000 Challenge

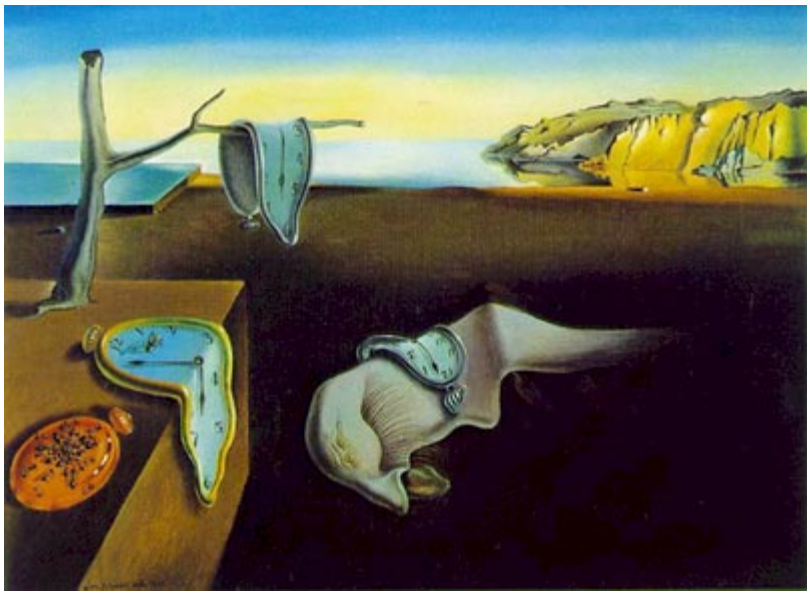
California 2000 Project Office

The technical issues surrounding the Year 2000 (Y2K) will continue to present challenges to the State of California for the balance of this century. Smooth, uninterrupted delivery of government services will depend on the state's ability to find and fix Year 2000 problems within the numerous computer systems and automated devices that sustain California's programs.

Since its inception in 1996, the California 2000 Project Office has delivered a suite of complementary programs and initiatives created to address the variety of systems, businesses and programs that can be impacted by the century change.

Conventional information technology (IT) systems, generally the older, mainframe applications on which the majority of the state's programs depend will be affected.

Also affected will be embedded systems, including numerous telecommunications, instrumentation, process control and other microchip-driven devices that monitor, control and regulate a myriad of functions related to health, safety, the environment and the operation of state offices and facilities; and desktop systems, including personal computers and local and wide-area area networks (LANS & WANS) that support the operations of state offices.



Even Salvador Dali recognized man's fear of time gone awry.

The California 2000 Project Office instructed departments to focus first on repairing and remediating the mission critical information technology (IT) systems that support the state's business functions. Over the course of 1998, departments have made substantial progress in remediating these mission critical IT systems.

Agencies also depend on IT systems that are not mission critical, but whose failure or malfunction could nevertheless cripple their ability to conduct day-to-day business. As they complete remediation of their mission critical IT systems, agencies are turning their attention to ensuring that their important non-mission critical IT systems will continue to operate into the next century.

The state's IT systems send and receive data from numerous public and private entities within and outside the state government. Each interchange of data poses a potential threat either that the data itself has been corrupted by a non-compliant system or that it will be misinterpreted by a non-compliant system.

The California 2000 Project Office provides guidance, sets policy and offers material assistance related to external interface issues to all levels of government. Over the past year, the California 2000 Project office has worked with agencies to respond to the federal government's request that states publish information about federal-state data exchange on the General Accounting Office website. At the request of the counties, and with their considerable input, the DOIT has created a web site application to be used by state agencies to store data about their external interfaces with California's counties.

In addition to conventional IT systems, the state depends upon numerous embedded systems which control, monitor, regulate or operate a wide variety of devices including dispatch and communications systems, office equipment, traffic control systems, utility systems, security systems, elevators, medical monitoring equipment, environmental control systems, and many others.

The magnitude and scope of the effort to assess and remediate these embedded systems is significant. To assist the state in undertaking this major task, the California 2000 Project Office launched the California 2000 Embedded Systems Program in June 1998. The program provides a rigorous, proven methodology for finding and fixing Year 2000-related problems in embedded systems.

The California Year 2000 Project Office provides policy direction to all state agencies and departments on Year 2000 remediation strategies and solutions.

In the course of remediating their embedded systems, state entities for example, must evaluate every device owned or leased by the state that potentially contains an embedded microchip. Frequently the embedded chip vendor, supplier or manufacturer must be contacted to determine the Year 2000 impact. To help streamline this activity, termed "vendor management," the California 2000 Project Office has established the California Embedded Systems Center (CESC), an electronic database and clearinghouse facility where agencies can obtain or request Year 2000 compliance information about specific embedded devices.

Under a contract negotiated by the DOIT, all government entities within California including state, county and municipal government, may use the Internet to query the CESC database for existing embedded system and associated vendor management information. Additionally, an authorized user within state government may request the CESC service provider to perform the vendor management activities described above on his or her behalf.

The thousands of desktop systems that California's agencies depend upon to carry out daily operations and provide citizen services may also be vulnerable to the Year 2000 problem. To assist agencies in finding and fixing Year 2000-related problems with their desktop systems, the California 2000 Project Office inaugurated the California Year 2000 Desktop Systems Program in June 1998.

The California 2000 Project Office recognizes the importance of addressing the legal issues surrounding the Year 2000 and has undertaken a legal program to protect the state's interests.

The legal program is responsible for developing the state's Year 2000 legal strategy and. The legal program serves as a resource to individual agencies, boards or departments's legal counsel in providing information and support to state entities tackling their Y2K challenges.

The DOIT legal staff, in collaboration with the Department of General Services, has developed Year 2000 warranty language to be included in all contracts for new IT systems, hardware, software and equipment as well as contracts for non-IT goods and services.

The California 2000 Project Office has instituted a number of policies to clarify agency obligations and responsibilities with respect to many significant Year 2000 issues facing California.

The California 2000 Project Office policy requires agencies to report the status of their Year 2000 remediation efforts monthly. Each quarter, the data collected for the IT, embedded systems and desktop systems programs is analyzed, summarized and reported in the DOIT's Quarterly Report to the administration, agency secretaries, and the departments. Six quarterly reports have been published to date. As new issues surface, comprehensive issues papers, and other relevant documents are produced to provide guidance to state entities.

By means of Executive Order W-163-97 departments have been instructed to make Year 2000 remediation a priority and to refrain from commencing new IT projects until mission critical systems are Year 2000 compliant. Consistent with this order the DOIT has defined the specific circumstances under which new discretionary IT projects are allowed to commence.

In conjunction with the California Association of Local/State Chief Information Officers (CALCIO) Task Force, the DOIT has instituted policies which define the rules under which state departments and California's counties will exchange data.

To gain a statewide perspective on its IT systems, the DOIT has directed departments and agencies to prioritize their mission critical systems.

The DOIT has provided testing guidance and set fundamental testing completion criteria requiring departments to test their IT systems in both current (20th) and future (21st) century environments before declaring their remediation to be complete.

In both the 1997-1998 and the 1998-1999 fiscal years, the Legislature appropriated funds earmarked solely for Year 2000 remediation of mission critical systems including IT, embedded systems and desktop systems that support mission critical programs. In each year, the Legislature assigned the responsibility for administration of this fund to the DOIT. In cooperation with the Department of Finance, the DOIT continues to review requests for Year 2000 funds and work with departments to review the funding needs appropriately and in a timely manner. .

Year 2000 Challenge Outreach

The Year 2000 problem touches every government agency and private sector organization that employs technology worldwide. The California 2000 Project Office is committed to helping its sister government organizations within California to achieve a successful outcome to their Year 2000 remediation efforts.

In February 1998, the California 2000 Project Office sponsored the *Statewide Intergovernmental Summit on Year 2000*, the first such conference in the nation. More than 700 attendees from state, local and the federal government heard presentations by experts from government and private industry who are in the front lines of the Year 2000 remediation. The California 2000 Project office sponsored a second, smaller, well-received summit in August 1998 focussing on Year 2000 telecommunications issues, emergency response, and external interface management.

In addition to sponsoring meetings with the state's CIOs to discuss the status of the Year 2000 effort, the California 2000 Project Office has convened selected department directors to begin discussions about statewide Year 2000 contingency planning and has held meetings with the Public Utilities Commission to discuss Year 2000-related issues unique to the utilities industry.

In the past year, the California Chief Information Officer initiated and served as chair of the CALCIO Task Force, a caucus of chief information officers (CIOs) from various counties. The group is charted to recommend commonly beneficial policies and to foster communication among California's CIOs in state, county and municipal government.

The California 2000 Project Office represents the state at the Federal level through participation in the National Association of Information Resource Executives (NASIRE), various interstate and federal task forces, conferences, summits, testimony before Congress and participation in the monthly interstate teleconference chaired by the Special Assistant to President Clinton's Council for Year 2000 Conversion.

6 New Trends and Technologies: The DOIT's Vision for California's Future

Electronic Commerce

California State government is preparing for a major increase in the use of electronic commerce (EC). A few State agencies are already using digital certificates for secure transactions but the Year 2000 (Y2K) effort has greatly slowed the implementation of EC.

Digital Certificates are a form of encryption technology that enable parties to an electronic communication to identify the source of a document or other electronically submitted material and to ensure that the material has not been read or altered by any other individual that is not a party to the transaction.

Once departments have their environments prepared for Y2K, they will immediately move to develop EC enabled applications.

Current Status

To prepare for this increased interest and workload, DOIT is working with Federal agencies, other state governments, the private sector, and state government advisory committees. These groups are working together to learn the readiness of EC technology and provide business models for organizations to follow. There have also been efforts to create policy guidelines for general use.

To take full advantage of the efforts of these groups, the Department of Information Technology (DOIT) has created a strategic plan for electronic commerce. This is the first step in developing the policies for the State. The Information Technology Coordinating Council's Electronic Commerce Task Force will finalize this strategic plan and aid in the development of the State policies.

Initiatives

Steps have already been taken in developing infrastructure for the implementation of electronic commerce. These efforts are now being coordinating to develop an EC infrastructure for the State. The following are some of the initiatives that are being coordinated.

The Secretary of State was directed by the Legislature to develop regulations on digital signatures. These regulations were included in the *California Code of Regulations* on June 12, 1998. The regulations list multiple criteria

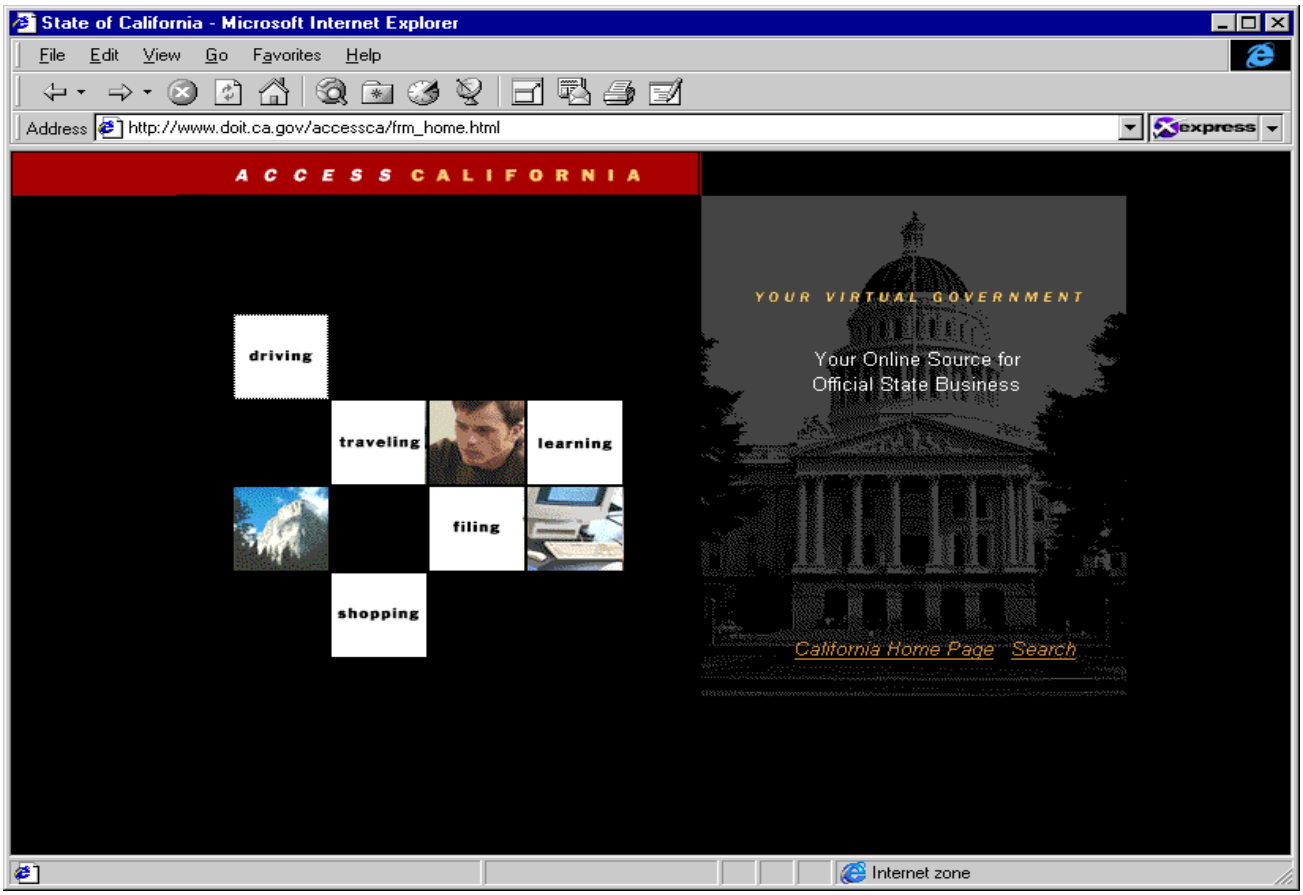
that have to be met to produce a valid digital signature. The Secretary of State is still developing the environment necessary to allow these regulations to be applied.

The DOIT has been working with the two major State data centers, Teale Data Center (TDC) and Health & Welfare Data Center (HWDC) on becoming a Certificate Authority. The data centers are planning to be the Certificate Authority for State agencies, State business applications and State employees. The business case is being developed by the TDC.

DOIT has also sponsored a project to develop a model Internet credit card application to be used for payment of State services. The Department of Parks and Recreation is working with the Teale Data Center, Microsoft, and Compaq in developing this model application. The California State Store, sells products promoting California.

The store currently advertises on the Internet but only takes credit cards by phone or FAX. This enhancement to their business will reduce costs and provide extra convenience to their customers. Once this application is complete, the model will be available to other State agencies through DOIT policies and the Teale Data Center.

To aid the public in utilizing the vast amount of State information being published on the Internet, DOIT has created an E-Government Internet home-page. This Internet home-page has been designed to relate to the users way of life, rather than state agency functions. Users can choose areas of



Access California will serve as California's electronic government home page.

interest such as: driving, shopping, learning, and traveling. When one of these subjects are chosen, the user then sees an inventory of related web applications, regardless of agency, web site, or location. Although most of these applications consist of static information, true electronic commerce applications are being developed and as they become available this home-page will promote their use.

A draft Strategic Plan for Electronic Commerce for the State of California has been developed. The Information Technology Coordinating Council (ITCC) will finalize this draft. To create the final version, an Electronic Commerce Task Force has been formed from the ITCC. Once this task force has completed the strategic plan, the next endeavor will be to develop the State policies on Electronic Commerce. These policies will include the Secretary of State's digital signature regulations, data centers' responsibilities, and processes developed by other work groups.

Agency Projects

Some agencies have already embarked on developing EC applications. Some of these departments and applications are:

Department of Information Technology – The DOIT has developed an Internet-based project tracking system. This system is being used internal to DOIT at this time but is planned to be expanded for departments to submit projects on-line via the Internet.

State Controller's Office – This office is developing an Internet-based State Travel Claim system. Employees will be able to submit travel claims and the appropriate approval provided over the Internet.

Student Aid Commission – The commission is developing an Internet-based system for student loans. The first phase will be connectivity to California's higher educational institutions and the second phase will be connectivity to students.

Department of General Services (DGS) – The department will shortly begin a procurement pilot deploying Ariba Technologies Inc.'s Operating Resource Management application. The ORM software will enable buying over Intranets, using electronic catalogs from the state's pre-negotiated contract suppliers, including Hewlett-Packard and CompUSA. The DGS will also deploy PeopleSoft's client-server purchasing application to handle annual procurement contracts worth an additional $2 billion, which will be awarded through competitive bidding. Those transactions will mainly use a wide area network (WAN), although some may move to the Internet over time.

National Efforts

During the decade of the 1990s several trends of significance to our society have emerged. These trends are evidenced in new programs and applications often described with the general label of "electronic commerce". The three groups representing state government efforts in the domain of electronic commerce concluded that some type of alliance or coordination of efforts was merited. In 1997, the National Association of State Comptrollers (NASC), the National Association of State Information Resource Executives (NASIRE), and the National Association of State Purchasing Officials (NASPO) jointly sponsored and delivered an educational conference on electronic commerce in the states.

Also in 1997 the same three associations banded together to encourage the development of standards for accreditation of certificate authorities, and to enable Internet based electronic commerce. This effort resulted in the three associations and several states (including the DOIT for California), joining the Internet Council, comprised of public and private sector interests dedicated to promote Internet based electronic commerce and managed under the auspices of the National Automated Clearinghouse Association (NACHA).

Building on the success of the EC Conference and the NACHA Internet Council, a strong desire was expressed to create a framework for ongoing cooperation and coordination among the states and private sector in matters pertaining to electronic commerce. In February 1998, a meeting was conducted by NASC, NASIRE, and NASPO to create such a framework. This resulted in the National Electronic Commerce Coordinating Council (NECCC).

The NECCC is a voluntary organization dedicated to information exchange and education on electronic commerce (EC) issues of interest to the participants. The NECCC exists by mutual agreement of its members. Membership is comprised of persons representing government interests, such as leadership and policy officials from state governments, and persons representing the interests of the private sector. DOIT has been a very active member in this organization.

Most of the electronic commerce content and work effort originates from three committees of the NECCC. Each committee selects its own chair, organizes its own agenda and work plan, and is supported by a designated professional staff.

One such committee is the Education and Program Committee. This group had two goals in 1998: to organize and deliver a second Conference on Electronic Commerce in the States, and to conduct and publish a survey on electronic commerce projects and activities. The second annual conference on Electronic Commerce in the States was conducted in December 1998 in Phoenix Arizona.

The second committee is called the Legal and Legislative Committee, and focuses on current and proposed legislation related to electronic commerce. This group develops consensus policy positions on issues pertaining to the role of government as it relates to electronic commerce. Such positions are intended to provide guidance helpful to the ongoing policy debate. In addition**,** the Legal and Legislative Committee maintains a close liaison with the Internet Council, especially on legal considerations for Internet based electronic commerce. This committee has generated an informational area on the NECCC web site which allows States to share information and learn of interesting events occurring with EC.

The third group, the Communications Committee, is dedicated to the exchange of information across all the committees. In the interval between annual conferences, the Communications Committee will produce informational packages (anticipated on a monthly basis) for distribution to interested parties. The Communications Committee intends to sponsor the creation and distribution of in-depth papers on selected topics, for example: descriptions of important EC projects or best practices. Such papers would be produced from time to time throughout the year.

Future and Conclusion

Electronic commerce, especially using the Internet, is a very immature technology. Although the technology vendors are making major strides, pilots like the Authentication & Network of Trust (NACHA Internet Council) demonstrate the weaknesses in the current environment. This pilot tested the concept of the public procuring goods over the Internet using multiple Certificate Authorities, banks, and retail sources. The pilot took over twice as long as expected because of the following:

- Browsers couldn't meet all requirements;
- Certificate authorities use different formats for certificates;
- Each bank developed a different approach; and
- Cross certification didn't always work.

Given these types of problems, the State must move very carefully in developing electronic commerce. Some applications of EC have been tested and can be used but others are not ready for production use, especially in California where the magnitude of doing business dwarfs most other EC implementations. DOIT's EC strategic plan and policies will help guide State agencies through this emerging technology.

Revenue Maximization

California receives billions of dollars annually from the federal government and other entities for various mandated programs, such as transportation, welfare, public health and education programs. It is estimated that the state is owed perhaps hundreds of millions of dollars in uncollected funds, and although state agencies have made good headway, their efforts to capture those funds are often hampered by various factors, such as misaligned incentives, lack of investment capital or an inability to manage risk.

To address this issue, the DOIT has created a revenue maximization project designed to increase federal funds available to the state. This revenue maximization project (RevMax) allows state agencies to contract with outside vendors to identify and capture federal revenue currently owed but not collected by the state.

As designed, the RevMax project functions in a similar manner to partnerships successfully completed or underway in other states. Individual agencies would work with private firms, which in turn would identify areas of significant revenue maximization, develop a program to locate and capture federal funds and ensure that those funds are received by the state. Contractors would be compensated strictly on a contingency basis. Payment would be a pre-determined percentage of funds recovered; contractors bringing in no new revenue would receive no fee. Once the contract is completed, the agency would operate the program to ensure continued collection of those funds.

Vendors are already pre-qualified on a RevMax Master Services Agreement (MSA) jointly developed by the DOIT and DGS. Interested agencies are free to select any firm listed on the MSA. Prior to any contractual obligation, pre-qualified vendors would examine various agency or department procedures and available federal resources to assess the feasibility of a revenue maximization arrangement.

Agencies interested in pursuing a revenue maximization arrangement would request detailed proposals by vendors identifying specific funds available, a detailed methodology to recover those funds, and a reliable estimate of expected recoveries. Recovery estimates subsequently found to be substantially inaccurate would be considered grounds for contract termination. Agencies would be free to select the proposal containing the best overall value to the state.

Contracting vendors would be responsible for implementation of a system to identify all targeted funds available to the sponsoring agency. While revenue maximization projects are a partnership and vendors are expected to work in conjunction with state personnel, the vendor would have the primary responsibility for the project and should have minimal impact on state staff. Vendors would then provide the agency the documentation and material required to recover the identified funds.

All vendors would be compensated strictly on a contingency basis, with payments being a percentage – agreed to prior to the contract stage – of all identified funds actually received by the state (not funds identified but not received by the state). At the completion of the contract, the vendor would be expected to turn over systems developed during the course of the contract to the agency.

Statewide Internet Usage Policy

The Internet is playing an expanding role in creating more efficient government. Most state agencies are using the Internet to provide information and services to the public and are finding it to be an invaluable research and communication tool for state employees. However, as Internet usage rises, there is an increasing risk of abuse, including individuals using the Internet for purposes other than state business or state networks being jeopardized by viruses downloaded onto the system.

The DOIT has provided direction to state agencies and departments regarding Internet usage through issuance of a Statewide Internet Usage Policy. This policy, which provides a framework for appropriate Internet activities, requires agencies and departments to create and implement their own internal policies. Some of the issues addressed by the Statewide Internet Usage Policy include:

- Establishing that the state reserves the right to monitor and/or log all network activity with or without notice, including e-mail and all web site communications, and therefore, users should have no reasonable expectation of privacy in the use of these resources;

- Uses that are acceptable and encouraged, such as communications and information exchanges directly relating to the mission, charter and work tasks of the agency, announcements of state laws, procedures, hearings, policies, services, or activities, for advisory, standards, research, analysis, and professional society or development activities related to the user's state governmental duties, and in applying for or administering grants or contracts for state government research programs;

- Uses that are unacceptable, including material which violates or infringes on the rights of any other person, contains defamatory, false, inaccurate, abusive, obscene, pornographic, profane, sexually oriented, threatening, racially offensive, or otherwise biased, discriminatory, or

illegal information, or usage which violates agency or departmental regulations prohibiting sexual harassment, restricts the efficiency of the computer systems, or uses the system for any other illegal purpose;

- Existence of copyright laws and the consequences of copyrighted material;
- The proper use and risks of downloading public domain programs;
- The proper use of electronic mail, including a statement that e-mail is considered network activity, and as such, is subject to all usage policies;
- The responsibilities and procedures for regulation and enforcement of the policies; and
- Limitations of governmental liability.

The DOIT's standard also provides guidelines to agencies and departments for developing their Internet policy as part of their overall IT strategy. These guidelines cover such topics as Internet planning and access, agency home pages, Internet security, computer ethics and etiquette, and computer law and computer crime.

Because the growth of electronic commerce and electronic government is creating rapid changes, the DOIT will modify its policy as developments in Internet usage occur. The DOIT anticipates that it will reissue its Statewide Internet Usage Policy in 1999 to reflect these changes.

Electronic Mail

The 1996 DOIT Annual Report described four major goals for the state's electronic messaging systems. The past year has seen continued industry and state progress towards each goal. Although some product immaturities remain, it is now possible for the state to establish guidelines for future electronic message acquisitions and implementations that are consistent with those goals.

The four goals included the abilities to (1) exchange complex material in addition to brief text messages, (2) readily locate the e-mail address of proposed correspondence partners, (3) enhance of the overall security of e-mail, and (4) to reduce the difficulty and cost of maintaining electronic mail systems.

While marketplace consolidation has led to a rapid reduction in the number of different electronic messaging systems in use in state government, the adoption of a single vendor product standard for state government remains prohibitively expensive and unnecessary for the achievement of the state's e-mail goals.

The ability of e-mail systems to exchange more than simple messages depends both on the capabilities of the e-mail systems themselves and on the computer systems that are used to create and view the other material. The use of Internet protocols for electronic messaging is becoming common throughout the state's e-mail infrastructure, allowing near-universal ability to exchange simple messages between government email users and their government and private correspondents.

At the same time, the Internet and other market forces are working to reduce the number of separate document content formats

in use in and out of state government, greatly increasing the likelihood that message correspondents will be able to exchange and use documents as well. Both trends are rapid enough that special government efforts towards interoperability will probably be necessary only for smaller and less publicly visible departments.

The ability to locate the e-mail address of a desired destination again has shown the most encouraging progress during the past year. While many vendors are persisting in their efforts to differentiate their products from the competition, often at the expense of interoperability, the demands of the Internet and customers continue to drive real progress.

In particular, it is clear that the adoption of the standard LDAP protocol for exchanging e-mail directory information between unlike systems will soon result in the ability of a user to obtain real-time access to addresses contained in directories outside his or her organization. Each local e-mail system maintains its own directory addresses for its own users.

The current mechanism for locating addresses outside this environment is to periodically copy, and perhaps translate, the external directories into the directory of the local system. This mechanism is inherently unsatisfactory, for it is only as current, and accurate, as the last update, and is limited in scalability to the number of separate translations the e-mail administrator can maintain and the total number of addresses each system can contain. A better approach involves the dynamic, real-time reference to the directories maintained in other systems when an address is needed. This capability, which requires that each email product support the LDAP protocol for referencing other directories, also requires the establishment of a central "meta-directory" containing the location and contents of each local directory.

The DOIT is currently piloting such a meta-directory to assist in developing implementation requirements and usage standards. The DOIT anticipates that the state's production meta-directories will be operated in redundant tandem by the state's consolidated data centers, and is working with those data centers to develop plans for production implementation during calendar 1999.

Security in e-mail systems similarly depends upon the capabilities included in products, and on the compatibility of those capabilities in the products at both ends of a communication. Encryption of both messages and attachments is now possible with current product implementations, but generally only when the sender and receiver use identical products.

Moreover, encryption remains an option, selected on a per-message basis to avoid the significant processor workloads and consequent transmission delays required for a secure exchange. State departments vary in their rates of adoption of secure-enabled e-mail products, and their implementation of procedures and policies for secure e-mail exchange. As for other e-mail capabilities, current achievement is increasing with the migration to newer, more mature products and systems.

The cost and difficulty of maintaining e-mail systems remain a concern of both product developers and system owners. Although this issue is common to the office and desktop automation environment in general, e-mail has been notable for the relatively great difficulty of system administration, especially when compared to the somewhat intangible benefits of e-mail system use.

New vendor products which address this concern are being adopted, but electronic messaging support continues to demand substantial technical support from scarce skilled personnel.

Certainly, the advances in directory interoperability will offer a direct benefit to system administrators as well as users. Much of the effort by vendors who provide e-mail as a part of a broader office automation and networking strategy has been to integrate e-mail directories with the other tables of user attributes and capabilities, including file and resource access permissions, customization preferences and security profiles.

This integration may ultimately result in a substantial gain in convenience to users, especially those who work from more than one location, as well as to the personnel who must maintain these user definitions. Newer e-mail products are also designed to reduce the effort involved in routine file maintenance, system recovery and similar tasks.

Again, state progress towards these goals has been steady during the past year as new products are adopted and implemented. A related effort involves the exchange of technical knowledge and experience between state agency personnel. Efforts sponsored by the DOIT and the consolidated data centers to develop working groups of e-mail and office automation system administrators will provide benefits both in skill transfer and in managing vendor priorities and services levels. But while such efforts are valuable and productive, cost-of-ownership improvements are even more likely than other areas to continue incrementally over an extended period as the e-mail product matures both functionally and administratively.

The exchange of message attachments, security in communication, and easy-to-find directory entries all depend on the capabilities of both correspondents. The overwhelming majority of state e-mail traffic, like other forms of communications, occurs either within an individual department, or between the department and persons and entities outside of state government. The real benefits from e-mail improvements derive from enhancements in the ability to communicate with non-state entities, requiring that the state maintain a strict adherence to Internet-based interoperability.

The DOIT will continue to work for improvements in the State's uses of e-mail, because it is a heavily-used medium for communication, and improvements will help produce a more effective workforce.

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